

Consumers' understandings of natural implied
health claims and the effects of natural implied
health claims on food product evaluation and food
choice

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Abstract

Nutrition educators and policy makers are interested in how consumers use nutrition information on food packaging labels, to enable policy makers to improve health awareness, and to affect positive dietary change. In New Zealand two types of explicit health claims are allowed (general level health claims e.g. ‘gives you energy’ and nutrient content claims e.g. ‘high in calcium’) (FSANZ 2008a), and these claims are used by food manufacturers to market their food products. While manufacturers argue that health claims inform consumers’ choices, ambiguous terms may create confusion, particularly if consumers interpret these differently. The last two decades have seen the regulation of explicit health claims on manufactured food products internationally and in New Zealand, with health claims being the focus of extensive research. Literature has demonstrated that consumers use explicit health claims made by manufacturers and see these claims as beneficial. However, manufacturers also use implied health claims to market their food products. This study investigates, in the lives of ten adult New Zealanders, the personal meanings attached to implied health claims and the effects of these implied health claims on food product evaluation and choice.

The study design consisted of two phases. Phase I comprised ten structured interviews that explored consumers’ understandings of natural implied health claims and the effects of the natural claim on the evaluation of a mock cereal product. Phase II comprised three follow up interviews with existing participants that explored participants’ beliefs on both explicit and implied health claims whilst examining manufactured food products. Participant interviews were transcribed verbatim and analysed using grounded theory analysis in order to develop a conceptual framework and uncover emergent themes that could provide insight on the research question.

Descriptive analysis resulted in five descriptive categories that described participants’ understandings of implied health claims and their behaviour when they evaluated a natural implied health claim on a mock cereal product. The descriptive categories were: factors that influence food choice, natural claim interpretation, benefits, evidence and behaviour. The descriptive analysis was followed by a conceptual

analysis of phase I and phase II interviews of these ten participants, and resulted in six concepts. These concepts analysed different aspects of participants' understandings of natural implied health claims, relevant to the research question, and cohered to form the conceptual framework. The six conceptual areas were: conflicting product choice, avoiding interpersonal conflict, information preferences, perceptions of Front of Pack (FoP) information, difficulties with manufacturers' use of implied claims and managing FoP information. Data analysis through the conceptual framework generated the analytical themes of risk, trust and scepticism.

Participants' comments suggested that their food choices were dictated by an avoidance of 'bad' choices. In product evaluation, several participants recounted a 'negative logic' of 'bad' nutrients they wished to avoid in a healthy food. Artificial ingredients were avoided because they represented a risk that could not be easily measured. Overall, participants' comments suggested that artificial additives are an unnecessary risk and displayed a preference for more natural options when given a choice. Participants' expressed concerns hinged on trust they felt in the information. Individuals described foods that they habitually purchased in terms of their trust in the product content and in the food manufacturer. Participants noted that inconsistencies in product content and product claims affected their ability to trust the information, and led some participants to view FoP information sceptically. In general, participants described a preference for FoP claims to aid product evaluation and food choice, but were also aware that the information was a form of marketing. They evaluated claims with caution, and in context of other personally relevant product information.

Participants described being faced with a myriad of food choices daily. These ten participants expressed various strategies to make food purchase decisions manageable; within these strategies were a number of contradictions. In the present study, several participants' descriptions of natural implied health claims suggested a 'halo effect' as they inferred positive attributes beyond the scope of the claim, while knowledge of this misleading claim led participants to view FoP claims with scepticism. Regulatory body decisions to not define natural implied health claims adds to consumers' confusion and scepticism of FoP claims and detracts from the ability of credible claims to convey useful product information to the consumer.

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Table of Contents

Abstract.....	ii
Acknowledgements	iv
List of Tables and Figures.....	ix
List of Appendices.....	x
List of Abbreviations.....	xi
1. Introduction.....	1
1.1 Rationale	1
1.2 Objective.....	3
1.3 Aims.....	3
2. Literature review.....	5
2.1 Prevalence of obesity	5
2.1.1 Health and Economic Problems Associated with Obesity	5
2.1.2 Government responses to obesity	6
2.1.3 Summary	7
2.2 Food product information	7
2.2.1 Introduction.....	7
2.2.2 Background: required label Information on food packaging	8
2.2.3 Research on consumer use and understanding of mandatory nutrition information	11
2.3 Voluntary label information on food packaging.....	17
National Heart Foundation ‘tick’	18
Percentage Daily Intake.....	19
United Kingdom.....	20
Europe	21
Australia and New Zealand	21
2.4 Explicit health claims on food packaging	24
2.4.1 Regulation of explicit health claims.....	24
2.4.2 Prevalence of explicit health claims	25

2.4.3	Consumer understanding of explicit health claims	26
2.4.4	Effects of explicit health claims on food product choice.....	29
2.5	Implicit health claims on food packaging	30
2.6	Natural claims on food packaging	37
2.6.1	Historical background	37
2.6.2	Definition of natural implied health claims	38
2.6.2	Regulation of natural implied health claims.....	41
2.6.3	Consumer research on natural implied health claims	42
3.	Methodology.....	46
3.1	Qualitative methodology	46
3.1.1	Introduction.....	46
3.1.2	Data collection.....	47
3.2	Qualitative methods	51
3.2.1	Study design.....	52
	Phase I	52
	Phase II.....	53
3.2.2	Study sample.....	53
	Phase I	53
	Phase II.....	53
3.2.3	Data collection.....	55
	Phase I	55
	Phase II.....	56
3.2.4	Data handling.....	56
	Phase I	56
	Phase II.....	57
3.2.5	Data analysis.....	57
	Descriptive coding and analysis.....	57
	Phase I	57
	Level one.....	57
	Level two.....	58
	Level three	58
	Conceptual coding and analysis	58
	Phase I	58

Phase II.....	60
Conceptual framework	60
Thematic analysis	61
4. Results.....	62
4.1 Descriptive results	62
Category 1: Factors that influence food choice	62
Category 2: Natural claim interpretation	63
Category 3: Benefits.....	63
Category 4: Evidence required for a natural claim	63
Category 5: Behaviour.....	63
4.2 Conceptual results	64
4.2.1. Conflicting product choices	65
4.2.2 Avoiding interpersonal conflict.....	66
4.2.3 Information preferences	69
4.2.4 Perceptions of FoP information	74
4.2.5 Problems associated with manufacturers' use of implied health claims .	76
4.2.6 Managing FoP information	77
5. Discussion	79
Framework.....	79
5.1 Elaboration of analytical themes	79
5.1.1 Risk.....	79
5.1.2 Trust	81
5.1.3 Scepticism.....	82
5.2 In context of other literature.....	82
5.2.1 Risk.....	83
Risk society hypothesis.....	83
Food choice as a contemporary risk	83
Rise in obesity	84
Negative nutrition.....	84
Changing lifestyles	85
Superficial cognitive processing of nutrition information.....	85
Concern with food safety.....	86
5.2.2 Trust	87

5.2.3 Scepticism	88
5.3 Overall implications.....	89
5.4 Strengths and limitations	90
5.4.1 Strengths	90
5.4.2 Limitations	90
6. Conclusion	92
7. References.....	94
Appendix I.....	111
Appendix II.....	115
Appendix III	120
Appendix IV	127
Appendix V	132

List of Tables and Figures

Table 3.1	Demographic profile of participants	54
Figure 2.1	Example of a Nutrition Information Panel (NIP) on a package of peanut butter	11F
Figure 2.2	Theoretical Framework (Grunert and Wills, 2007)	12F
Figure 2.3	Example of a Multiple Traffic Light Label (TLL) on a package of cracker biscuits	17F
Figure 2.4	Example of recommended mandatory Nutrition Information Panel (NIP) with Percentage Daily Intake (PDI)	18F
Figure 2.5	Description and examples of nutrient content, general health and high level claims	25F
Figure 2.6	Overview of the substantiation required for general level and high level claims on food labels	26F
Figure 2.7	Depiction of a variety of food products front of package labels containing a natural claim	39F

List of Appendices

Appendix I	Information sheet to participants	111
Appendix II	Interview protocol: Phase I	115
Appendix III	Stimulus materials: Phase I	119
Appendix IV	Interview protocol: Phase II	126
Appendix V	Stimulus materials: Phase II	131

List of Abbreviations

ACCC	Australian Competition and Consumer Commission
ANZFA	Australia New Zealand Food Authority
BMI	Body Mass Index
BoP	Back of Pack
‘Code’	Australia New Zealand Food Standards Code
CSPI	Center for Science in the Public Interest
ELM	Elaboration Likelihood Model
EU	European Union
FDA	Food and Drug Administration
FoP	Front of Pack
FOPL	Front of Pack Label
FSANZ	Food Standards Australia New Zealand
HFCS	High Fructose Corn Syrup
Ministerial Council	Australia and New Zealand Food Regulation Ministerial Council
MTL	Multiple Traffic Light Label
NFA	National Food Authority
NFP	Nutrition Facts Panel
NHF	National Heart Foundation
NIP	Nutrition Information Panel
NLEA	Nutrition Labelling and Education Act
NZFSA	New Zealand Food Safety Authority
OECD	Organisation for Economic Co-operation and Development
PDI	Percentage Daily Intake
RDI	Recommended Dietary Intake
STL	Single Traffic Light Label
TLL	Traffic Light Label
UK FSA	United Kingdom Food Standards Authority
USDA	United States Department of Agriculture
US FDA	United States Federal Drug Administration

1. Introduction

This research study explores consumer understanding and the effects of implied health claims on food product evaluation and food choice during routine grocery shopping. Health claims can be divided into explicit and implied health claims. Explicit health claims refer to nutritional content or health related benefits of a food product. In contrast, implied health claims are claims that imply health benefits (e.g. ‘wholesome’ crackers) without stating explicit health benefits (US Food and Drug Administration 2008). Literature has demonstrated that consumers use explicit health claims made by manufacturers, and see these claims as beneficial (Williams 2005). Manufacturers also use implied health claims to market their food products. This study investigates, in the lives of the ten adult New Zealanders, the personal meanings attached to implied health claims and the effects of these implied health claims on product evaluation and choice.

1.1 Rationale

Nutrition educators and policy makers are interested in how consumers use nutrition information on food labels, to enable policy makers to improve health awareness, and to affect positive dietary change (Williams 2006). In 1997, Food Standards Australia New Zealand (FSANZ) initiated Proposal 167 that included creating a food labelling format that assisted consumers to use nutrition information to improve their food choice, thus delivering public health and safety benefits (FSANZ 1999). A significant result of Proposal 167 was the introduction of a mandatory Nutrition Information Panel (NIP) on all manufactured food products within Australia and New Zealand in 2002 (Curran 2002).

Most research on consumer understanding of nutrition information has been conducted in the United States. New Zealand research suggests consumers experience difficulty in using the nutrition information to assess a products’ healthiness (FSANZ 2005a).

Health claims are voluntary elements on food packaging that can assist consumers with healthy food choice (Leathwood *et al.* 2007). In New Zealand and Australia, FSANZ regulates the types of health claims allowed on packaged foods, while the New Zealand Food Safety Authority (NZFSA) implements the food labelling standards in New Zealand. In New Zealand two types of explicit health claims are allowed (general level health claims e.g. ‘gives you energy’ and nutrient content claims ‘high in calcium’) (FSANZ 2008a). Despite the use of implied claims widely by food manufacturers to communicate product information, they are only weakly regulated by the Fair Trading Act (1986) (Commerce Commission 2010).

While manufacturers argue that health claims inform consumers’ choices, ambiguous terms may create confusion, particularly if consumers interpret these differently (Ippolito 1999). The last two decades have seen the regulation of explicit health claims on manufactured food products internationally and in New Zealand, with health claims being the focus of extensive research. The large body of research on explicit health claims suggests that consumers find health claims useful and prefer short messages rather than complex claims (Williams 2005). However, health claims may also result in a ‘halo effect’, where consumers rate products higher for health attributes not mentioned in the claim, and a ‘magic bullet effect’, where consumers attribute inappropriate health benefits to the product (Roe *et al* 1999). In contrast to explicit health claims, there is very limited research on implied health claims and it is unclear whether consumers infer the same benefits or if they differentiate between the two types of claims. This study argues that consumers view implied and explicit health claims similarly.

During the 1970’s, growing public concern with health had consumers questioning their food choices, and consumer confidence in food manufacturers began to erode (Levenstein 1993). This heralded an increase in the appeal of natural foods. Food manufacturers mounted consumer education campaigns to explain the necessity of additives and processing to maintain convenience and flavour. At the same time, food manufacturers profited on the natural trend by choosing to re-brand their products and highlight the ‘natural’ content. This in turn fed into consumer growing concern on the dangers of additives. Despite the commercial success of natural foods, it was questionable whether these new natural foods were additive free or healthier

(Levenstein 1993). As a result of growing concern of manufacturers potential misuse of natural claims, lobbyists urged the United States Federal Drug Administration (US FDA) to define natural claims. However, despite several attempts the US FDA has yet to define natural claims (Fisher & Carvajal 2008). Today, natural claims continue to remain popular, and were ranked the number one claim on emerging products globally in 2009 (Mintel 2009).

1.2 Objective

There has been extensive research on consumer understanding of explicit health claims. In contrast there is very limited research on consumer understanding of implied health claims, a type of health claim that is widely used by food manufacturers to highlight product benefits. Nutrition policy makers believe health claims to be powerful tools to relay nutrition information to the consumer, however if misunderstood they may negatively affect healthy food choices. This study aims to understand how consumers use implied health claims, what benefits they infer from implied claims, and if implied claims affect consumers' product choice. A natural implied claim was chosen because of the widespread use of the claim by food manufacturers and reported appeal to consumers.

1.3 Aims

- To explore individual participants' shopping habits, typical shopping selections and food preferences through face to face structured interviews.
- To develop a framework to conceptualise the personal perceptions of responses to and meanings of the particular implied health claims, which participants feel are significant in their shopping choices.
- To observe participants' behaviour in evaluating contrasting products, both with and without an implied claim.

- To observe key perceptions of an implied claim of significance on breakfast cereals, and examine the effects of this implied health claim on the product decisions of participants in the detailed contexts of their usual food shopping and eating decisions.
- To explore participants' perceptions of the differences between implied and explicit health claims and examine the effects of implied claims on their product evaluation, food label inspection and choice.

The study findings will contribute to the literature on trends in food marketing from an emphasis on taste to nutrition by further revealing consumers' responses to the implied health claims successfully 'selling' nutrition (Levenstein 1993).

2. Literature review

2.1 Prevalence of obesity

Obesity is defined as a body mass index (BMI) greater than or equal to 30 kg/m² for adults (WHO 2000). Historically, obesity prevalence has been low (Swinburn 2009); however, obesity prevalence has increased in Australia and New Zealand in recent decades (Sacks *et al.* 2008). In New Zealand, the obesity prevalence in 2006/2007 was 24 percent for individuals aged fifteen and above, a prevalence rate similar to the 2002/2003 estimates. This is a relatively high prevalence of obesity in comparison to other countries in the Organisation for Economic Co-operation and Development (OECD), which have a median of thirteen percent (Ministry of Social Development 2010).

These aggregate estimates mask large differences between ethnic groups; for example, in New Zealand, Pacific peoples and Māori have higher obesity rates, 65 and 43 percent respectively. In addition, the prevalence of obesity is also higher in deprived regions in New Zealand. Moreover, the rising obesity prevalence rate is not restricted to developed nations and is often more rapid in developing countries than industrialised nations (Ministry of Social Development 2010).

The main factors involved in the rise of rising obesity prevalence have been an increased consumption of energy dense foods, which are high in sugar and saturated fat, and a reduction in physical activity (WHO 2000).

2.1.1 Health and Economic Problems Associated with Obesity

A higher BMI is associated with increased blood pressure, higher total cholesterol, LDL-cholesterol and reduced HDL-cholesterol, which in turn increase the risk of coronary artery disease (Wilson 1994; Swinburn *et al.* 2004). Obesity can lead to insulin resistance, and thus increase the likelihood that diabetes will develop. Other life threatening problems associated with obesity include hypertension and cancer (WHO 2000).

Non-fatal problems associated with obesity include respiratory difficulties, chronic musculoskeletal problems and infertility (WHO 2000). Overall, US researchers estimate that obesity is responsible for 400, 000 deaths per year, which is second only to tobacco (Finkelstein *et al.* 2004).

Obesity is not only a health problem but also an economic problem (Finkelstein *et al.* 2004). The economic costs of obesity comprise three elements: (i) direct costs to the individual and service provider in the treatment of obesity; (ii) the opportunity cost of loss of quality life resulting from illness or premature death; and (iii) the indirect cost of lost production due to sick leave or a premature death) (WHO 2000).

Few studies have estimated the economic burden of obesity; conservative estimates suggest this accounts for approximately two to seven percent of the total health care cost (WHO 2000).

Using data from health costs in 1991, Swinburn *et al.* (1997) estimated the direct costs of obesity in New Zealand to be 135 million, which represented 2.5 percent of the health care costs, and was consistent with international estimates (Swinburn *et al.* 1997; WHO 2000). Since 1991, the obesity prevalence rates in New Zealand adults have roughly doubled from 14 percent to over 25 percent. A second study, based on the 1991 cost analysis, estimated the direct costs of obesity at 460 million in 2004, which accounted for the increase in obesity prevalence (MoH 2009).

2.1.2 Government responses to obesity

The New Zealand government has identified a reduction in obesity as a primary population health objective (Sacks *et al.* 2008). Over the last decade, the government has implemented several measures to reduce and prevent obesity; these include demonstrating leadership to reinforce the seriousness of obesity and its consequences (such as the “walk the talk” program). In addition, governments have developed and supported a multi-sector response to obesity that involves government, as well as the private and public sectors. Until recently, New Zealand had a comprehensive “Healthy Eating, Healthy Action” strategy that promoted environmental and

behaviour change through health promotion and social marketing campaigns (such as ‘feeding our futures’) (Weight Management 2009).

2.1.3 Summary

The increasing prevalence of obesity is a key threat to health, with significant economic and health consequences that include increased risk of fatal diseases and impaired quality of life. Strategies to reduce the prevalence of obesity include education, social marketing and regulation, all of which have been employed over the last decade. However, the current government’s preferred response is education.

2.2 Food product information

2.2.1 Introduction

Market forces and government policy may influence food product composition and thus affect diet quality (Golan & Unnevehr 2008). In New Zealand and Australia, FSANZ develops standards for food labelling for food manufacturers, while NZFSA implements the food labelling standards in New Zealand.

The food labelling standards currently require manufacturers to include a mandatory ingredient list, NIP and allergen declaration on most packaged food products. FSANZ attempts to review the food standards code every five years, to ensure the code is consistent with recent scientific evidence (FSANZ 2008a).

Changes to food policy can raise consumer awareness and demand for new product attributes. For example, in 2006, the mandatory labelling of trans fatty acids in the US increased consumers’ awareness of trans fatty acids and led to a reduction in the trans fatty acid content of processed foods (Golan & Unnevehr 2008).

Consumer awareness can also promote product reformulation by placing pressure on food manufactures. In 2009, Cadbury New Zealand changed the composition of their chocolates by replacing cocoa butter with palm oil. This concerned many consumers as palm oil production creates deforestation and leads to climate change and loss of endangered species. In response to consumer pressure Cadbury removed palm oil

from some of their chocolates in New Zealand and Australia, and reverted to cocoa butter (Fox 2009).

In addition to mandatory product information, health claims are voluntary FoP labelling elements on packaged food products that manufacturers may use to promote their brands (Golan & Unnevehr 2008). In New Zealand and Australia, FSANZ regulates the types of health claims allowed on packaged foods (FSANZ 2010a). In addition, claims are subject to fair trading laws i.e., manufacturers cannot make false claims or deceive consumers. A false claim is likely to breach fair trading laws, even if the manufacturer mistakenly believes it to be correct (Commerce Commission 2010).

While manufacturers argue that health claims inform consumers' choices, ambiguous terms may create confusion, particularly if consumers interpret these differently (Ippolito 1999). US requirements that allow only health claims with demonstrated 'strong scientific agreement' may limit consumer misunderstanding; however, these may also limit the dissemination of potentially useful information (Ippolito 1999). This section explores the information provided on food packages, which ranges from mandatory details to marketing claims, and examines how consumers understand and respond to these details.

2.2.2 Background: required label Information on food packaging

In 1991, the *Food Standards Australia New Zealand Act* established FSANZ, originally called the National Food Authority (NFA). In 1994, the NFA began the significant task of a complete review of the Food Standards Code – this continued to be a major activity of the authority, dominated work until 2000, and resulted in major changes to the code. Concurrently, the NFA developed a joint Australia New Zealand Food Standards Code (the 'Code'), and developed and formed the bi-national government agency now known as the Australia New Zealand Food Authority (ANZFA), in 1995. In 1998, ANZFA conducted a review of the food regulatory system, the Blair review, to reduce the regulatory load on the food industry. The establishment of FSANZ (from ANZFA) followed on from the Blair review, which included changes in the role of the board and a separation of FSANZ's policy and regulatory role (FSANZ 2010b).

The role of FSANZ is to develop joint food standards and codes of practice for the food industry; these standards and codes regulate the content and labelling of food, and represent the primary means of communicating nutrition information to consumers within Australia/New Zealand. FSANZ has three objectives: the ‘protection of public health and safety; the provision of adequate information relating to food to enable consumers to make informed choices, [and] the prevention of misleading or deceptive conduct’ (FSANZ 1999).

In 1997, FSANZ (at that stage still part of ANZFA) initiated Proposal 167 to review the regulation of nutrition labeling in Australia and New Zealand. The goals of Proposal 167 included food labelling that reflected current scientific understanding of diet-disease relationships. In addition, the proposal set out to create a labeling format that assisted consumers to use nutrition information to improve their food choice, thus delivering public health and safety benefits. Proposal 167 included a comprehensive review of nutrient elements, contents and presentation of nutrition information on foods. In 1997, nutrition information was voluntary for most foods, with the exception of infant formula, supplemental drink bases, and drinks and sports foods in Australia, and packaged foods that made nutrition claims in both Australia and New Zealand (FSANZ 1999). New Zealand and Australian food labeling was less regulated than the US which, in 1990 had developed the Nutrition, Labelling and Education Act (NLEA). This act required US food manufacturers to provide a ‘Nutrition Facts Panel’ (NFP, similar to the NIP) for most processed foods; exceptions included meat and poultry (Hooker & Teratanavat 2008).

As part of the food labeling review, FSANZ conducted an impact assessment of the proposed standard on stakeholders (including consumers and food industry) with particular reference to the financial, economic and health impacts. FSANZ (1999) considered three options for food labeling:

- (i) to maintain the status quo requiring nutrition labelling only when a product carries a nutrition claim or is required by the ‘Code’
- (ii) to opt for no regulation with a code of practice developed on nutrition labeling to assist stakeholders

- (iii) to amend the 'Code' and extend requirements for most packaged foods within the retail sector

Option (i) is cost effective but only provides nutritional information on a limited number of products and does not allow for comparison of the nutrient profiles of a variety of foods across the food supply. Option (ii) with no mandatory nutrition information on packages could considerably disadvantage consumers. FSANZ found consumers had difficulty in the comparison of products or verification of claims, which prevented informed choice of food selection. FSANZ considered option (iii) the most beneficial as it provided consistent nutrition information to assist consumers in making an informed choice, despite increased costs for sourcing information. Additional benefits included ready comparison of energy and fat profiles that assist in the monitor of energy and fat intake, and relate directly to the prevention of obesity, heart disease and the maintenance of good health. In addition, governments benefited by forming links between public health and nutrition, and using food labelling to protect both public health and food safety (FSANZ 1999).

With a lack of detailed information on the cost of diet related disease in Australia compared to the cost to the local food industry of making the proposed changes, a cost benefit analysis was undertaken using US data. Mandatory labeling of twelve elements (versus the proposed six by FSANZ) had been in place in the US since 1993, following the NLEA. Prior to the NLEA, the US Federal Register concluded that despite significant costs (an estimated combined 165 million dollars to government and food industry) the consumer benefits exceeded the costs that shareholders, taxpayers and consumers would pay (estimated at 4.4 – 26.5 billion dollars per annum). This analysis influenced FSANZ, which reached a similar view and concluded that option (iii) would be cost effective in meeting its objectives (FSANZ 1999).

As part of Proposal 167, FSANZ reviewed both nutrition elements and nutrition labels. The reviewers noted that:

The challenge for the label designer lies in the desire to cater for the differing needs of consumers, whilst striving for design consistency,

meeting industry needs, acknowledging the practical constraints and providing a label which is graphically appealing, readily used and easily understood, with the consumers able to find the relevant information quickly and in a format that is meaningful, and requiring as little computational effort as possible (FSANZ 1999 Appendix II.I p 75).

Proposal 167's most significant recommendation to the 'Code' was the introduction of a mandatory NIP on all packaged foods, to allow consumers more consistent nutrition information and enable an informed choice. From 2002, it became compulsory to include a NIP on all manufactured food products in Australia and New Zealand. Standard 1.2.8 'Nutrition Information Requirements' clause five mandates the current format in which manufacturers display the NIP and prescribes the exact order each labeling element must appear. The NIP must be presented as two columns – one per serve and one per 100g or per 100ml as shown in Figure 2.1 (FSANZ 2010c).

The NIP states total energy, carbohydrate, protein, fat, saturated fat and cholesterol. In addition, manufacturers are required to include an ingredient list and allergen declaration (FSANZ 2010).

2.2.3 Research on consumer use and understanding of mandatory nutrition information

Nutrition labelling, at point of purchase, is an attempt to provide consumers with information to make healthy food choices. However, in order for nutrition labels to have an effect on food choice several steps need to occur. In order to understand these steps the present study's theoretical framework is based on the framework of Grunert and Wills (2007), which is slightly modified. The theoretical framework is based on two streams of research, that of consumer decision making and of information processing (refer to Figure 2.2). In order for nutrition labels to have an effect on consumer understanding and use, consumers first must be exposed to the nutrition information. This exposure may be accidental or via a directed search. Secondly, effects on behaviour occur when the consumer perceives this information, either at a subconscious or conscious level, and then processes the information to produce a level of understanding. This step wise procedure from exposure to behaviour may be

NUTRITION INFORMATION		
Servings per package: (insert number of servings)		
Serving size: g (or mL or other units as appropriate)		
	Quantity per Serving	Quantity per 100 g (or 100 mL)
Energy	kJ (Cal)	kJ (Cal)
Protein	g	g
Fat, total	g	g
– saturated	g	g
Carbohydrate	g	g
sugars	g	g
Sodium	mg (mmol)	mg (mmol)
(insert any other nutrient or biologically active substance to be declared)	g, mg, µg (or other units as appropriate)	g, mg, µg (or other units as appropriate)

Figure 2.1 Example of a Nutrition Information Panel (NIP)

This is a NIP depicting the mandatory nutrients (energy, protein, fat, saturated fat, carbohydrates, sugars and sodium) in two columns, per serve and per 100g.

(FSANZ 2010c)

moderated by several factors, including consumer motivation, prior knowledge, demographics and label format (Grunert & Wills 2007).

Consumers indicate that they prefer more product information, than less, however it is unclear how they utilise this information. The process whereby a consumer forms an understanding of a nutrition label is an example of an information processing system. This procedure involves exposure to external information, which may be cognitively processed, and an assessment formed that may result in a behaviour. (Leathwood *et al.* 2007). Several information-processing models have been developed to understand behaviour. The present study has used the Elaboration Likelihood Model (ELM) (Petty & Briñol 2008) because it takes into account the level of processing that occurs based on environmental conditions such as shopping in a supermarket and level of motivation (Ford *et al.* 1996).

Information processing is hypothesised to be either systematic (in-depth) or heuristic (superficial) (Petty & Briñol 2008). A heuristic can be defined as a rule of thumb, based on experience or common sense that allows for a 'mental short cut' in decision making. Heuristics can range from the general (e.g. more expensive products are higher quality) to the specific (e.g. 'buy Watties, it's what my family has always bought') (Spielberger 2004). According to the ELM, 'variables are most likely to be processed as cues under conditions in which thinking is constrained, such as a supermarket environment, or to be processed as arguments under conditions in which thinking is high' (Petty & Briñol 2008 p 5). Consumers are believed to take into account more information during an elaborative pathway where they reflect on the information in detail, assess arguments and analyse the information. In contrast, in peripheral or heuristic processing individuals respond to cues to draw rapid conclusions. For example, individuals with low motivation may choose to rely on easily accessible information, such as FoP claims that describe product benefits (Ford *et al.* 1996).

The second important assumption in the ELM is the 'associative network' of memories whereby related information is linked or grouped into more general categories, and in part represents the individuals stored knowledge. When an individual reads a piece of information, they can be guided by these mental links to

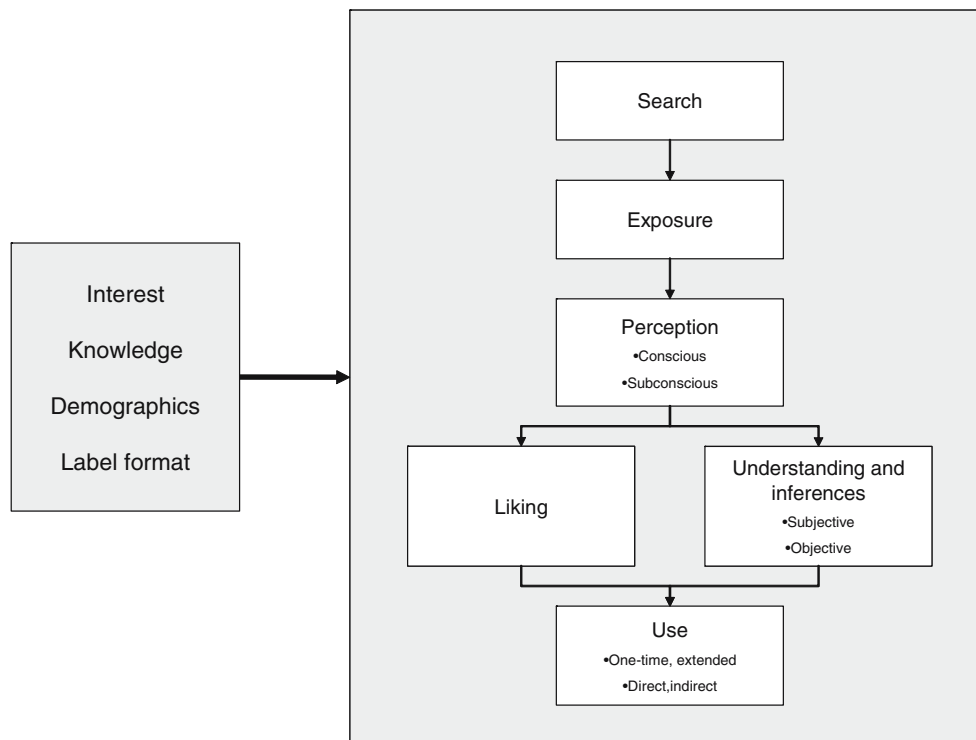


Fig 2.2 Theoretical Framework (Grunert & Wills 2007)

access associated memories. Triggering these mental links can be active, but is thought that much of this knowledge can be accessed with little mental effort. This process is termed ‘spreading activation’, where activation of one memory can lead to a wider group of associated memories. ‘Horizontal activation’ can trigger characteristics of an object, while ‘hierarchical activation’ can trigger intricate associations (Leathwood *et al.* 2007). For example, the word ‘bread’ can trigger horizontal associations to characteristics (for example, ‘a grain, usually sliced’) to hierarchical associations (for example ‘healthy’ or in contrast ‘fattening’). The individuals resulting interpretation is moderated by how far this activation spreads through their associative network. Humans are usually active processors, and typically build on pre-existing information. Spreading activation is relevant to consumer understanding of nutrition information, because consumers may infer attributes to pieces of information, that go beyond what is stated, which may lead to misleading conclusions of claim benefits. For example, a product claim, ‘low in fat’ may trigger hierarchical associations on other nutrients for a consumer (for example, ‘a product low in fat may also be low in energy’). This association may be correct but it marks an interpretation beyond the borders of the product claim (Leathwood *et al.* 2007).

Despite increases in the time involved with in-depth computing both systematic and heuristic processing are prone to misinterpretation, and in some instances heuristics can outperform systematic processing, and have the added advantage of requiring minimal time and cognitive effort (Todd & Gigerenzer 2000). For example, the risk level of incoming heart attacks at a hospital can be assessed based on three yes or no questions, which more accurately predict risk level than some complex statistical methods. (Breiman *et al.* 1993 cited in Todd & Gigerenzer 2000). However, Petty & Briñol (2008) note that even in conditions of high processing, many variables can bias thinking, which include attitudes, emotions and credibility of the source, and bias is most likely to occur with an ambiguous message in which the ‘the information can be interpreted in multiple ways’ (Petty & Briñol 2008 p 5 para 3).

Research on consumer understanding of food labels is important, because it helps scientists understand how mandatory information informs consumer food choice, which can lead to improvements in how nutrition information is presented to the consumer. In 2003, FSANZ assessed understanding of food labels in a quantitative

survey. Participants viewed the nutrition information on three types of foods, with two variants in each food group, and selected the variant they considered healthiest. Overall, consumers could correctly interpret nutrition information on a single product but struggled to make accurate comparative judgements of products based on nutrient information. For example, when participants were asked to evaluate which product contained a higher amount of a specific nutrient, 77 percent of individuals answered correctly. However, as the complexity of the task increased, participants success rate declined (FSANZ 2003). In addition, as the complexity of the task increased, the results suggest that participants relied on a simple heuristic and selected a product based on nutrient they most valued (Scheibehenne *et al.* 2007). Of the three types of foods, respondents' evaluated cracker biscuits best. The cracker variants differed in sodium content by 45 percent, however the majority of participants based their decision on total fat, and not sodium, which was only marginally lower in product B. Similarly, for snack foods 35 percent of individuals chose the correct product, however an almost equal proportion chose the incorrect product (39 percent). The correct choice was product B, which contained a significantly lower sugar content (12.2g/100g versus 30.2g/100g), and similar in fat content. Of the participants who answered correctly, 64 percent of respondents based their decision on the fat content, instead of the sugar content (FSANZ 2003). This suggests that the current nutrition labels are not meeting the intended goal of communicating nutrition information to consumers in a format that they can easily interpret.

A second New Zealand study (Gorton *et al.* 2008), also evaluated consumer understanding, in a sample of 1525 ethnically diverse shoppers from one city in New Zealand (Auckland). The sample included 401 Māori, 347 Pacific, 372 Asian and 395 New Zealand European and Other participants. The researchers assessed basic understanding of food labels by asking participants to calculate the total fat content, and per serve sugar content, in a sample product. Approximately two thirds of respondents correctly estimated the fat content per 100g and sugar content per serve, with no significant differences by ethnicity or income to locate this information. They also assessed interpretation of the NIP, by asking participants to rate the healthiness of a sample product using the NIP. There were wide variations between ethnic groups in ability to assess healthiness, with only one third of Māori and two thirds of New Zealand European and Other correctly identifying if a food was healthy (Gorton *et al.*

2008). Similar to the findings by FSANZ (2003), the results suggest a need for nutrition information to be presented in a format that consumers can more readily understand and use to make informed food choices. This is particularly relevant for low income and ethnic minority groups that are at greater risk for nutrition related disease, and who may benefit most from more accessible health information.

Globally, there is a growing awareness of the discrepancy between consumers' reports that they use the nutrition information, and the reality that they may not do so, and find nutrition information difficult to interpret (Grunert & Wills 2007). Consumer understanding may be objective or subjective. Subjective understanding is what the consumer has inferred from the product information, versus an objective understanding that is consistent with the food manufacturers' description. This may account for consumers' report that they understand food labels, when more objectively assessed studies suggest that level of understanding is significantly lower (Grunert & Wills 2007).

Consumer understanding of food labels may be used to inform food choice (refer to Figure 2.2.). Researchers have studied consumer use of nutrition in several ways that include self-reported and more objectively assessed direct methods. Self-reported use is a relatively quick and cost effective measurement of use of nutrition information, and represents the majority of studies.

Results from a quantitative door-to-door survey of 1940 Australian and New Zealand consumers, conducted by FSANZ (2003), suggest that self reported use of nutrition labels is moderate to high; approximately 80 percent of all respondents claimed to use the NIP most of the time or when they purchased a new food. Strengths of the survey include sample randomisation, with interviews conducted in major cities in Australia and New Zealand and respondent demographics similar to census data (FSANZ 2003).

Most self-reported studies on consumer use of nutrition information have focused on majority populations with few reports on minority groups. New Zealand Māori are at higher risk of nutrition related disease, and may benefit more from effective public health initiatives. In the FSANZ (2003) study, researchers conducted one group survey

of Māori peoples; participants were non-representative of the Māori population, aged mainly between 20 and 30 years old, and the results were included with the general findings.

The study by Gorton *et al.* (2008) aimed to address this gap, and explored the use of labels of minority populations within New Zealand. Label use was self reported, and participants were asked if they used labels, and was categorized as ‘always’, ‘usually’, ‘sometimes’, ‘rarely’ or ‘not at all.’ Pacific and Māori groups reported higher label use than a previous qualitative study, which reported very low levels of label use of Māori, Pacific and low-income group (Signal *et al.* 2008). Label use in all ethnic groups was similar to 2003 study (FSANZ 2003) and ranged from 66 to 87 percent with the lowest use in the Māori group at 66 percent, which suggested significant variation in label use according to ethnicity (Gorton *et al.* 2008). In the studies conducted by FSANZ (2003) and Gorton *et al.* (2008), education was greater in the sample population than population estimates; and because education can increase label use (Wang & Fletcher 1995) the studies may over-estimate label use. However overall, both New Zealand studies are consistent with international literature that suggest most consumers self report a high use of labels, ‘sometimes or often’ (Cowburn & Stockley 2005).

In contrast to studies that assess consumer use via self-reported methods, only two studies measured actual use of nutrition information. Both studies had relatively small samples size due to the labour intensive procedure of the technique, verbal ‘protocol analysis’, which attempts to measure subjects’ actual use of information (Higginson *et al.* 2002a; Higginson *et al.* 2002b). This technique is based on the theoretical theory that human thinking is an information processing system that consists of short-term memory, long-term memory, and a central processing unit. According to this theory, an individual with information in the short-term memory, either processes the information cognitively in the central processing unit or it is lost to the external environment. Researchers code subjects’ verbal expression of information in short-term memory, and code the transcripts according to the requirements of information processing theory as it relates to problem solving (Higginson *et al.* 2002a).

In a study by Higginson *et al.* (2002a), participants, equipped with microphones and recorders, selected healthy options of nine food types whilst they used verbal ‘protocol

analysis', to voice their thinking aloud. Transcripts of the verbal 'protocol analysis' revealed that comparison tasks, a comparison of two or more nutrients in two or more products, was the most frequent recorded use of nutrition information, a finding similar to self-reported studies (Scott & Worsley 1997). In contrast to self-reported studies, results of the analysis revealed that participants expressed a large percentage of nutrition information that they discarded and did not use to inform decisions about food choice. This led the researchers to conclude that a superficial expression of information may account for the large proportion of what consumers report as label 'use' in self-reported studies (Higginson *et al.* 2002a). This finding is consistent with a second study by the same researchers (Higginson *et al.* 2002b). As these are the only known real life tests of consumer use, they provide useful knowledge on these consumers' actual empirical use of nutrition information. In addition, participants' minimal use of nutrition information to inform product choice casts doubt on the effectiveness of mandated nutrition information on food products to assist consumers with food choice.

2.3 Voluntary label information on food packaging

In addition to mandatory label requirements, manufacturers may include voluntary elements on food package. A Front of Pack Label (FOPL) provides summary nutrition information to consumers on the front package of a food product. In 2009, the Australia and New Zealand Food Regulation Ministerial Council (Ministerial Council) advised that FOPLs may contribute to consumers' understanding of the nutritional content of a food and aid healthy food choice (Australia and New Zealand Food Regulation Ministerial Council 2009).

Several FOPL schemes have been voluntarily implemented within New Zealand and overseas. FOPL labelling is classified into food based (e.g. National Heart Foundation 'tick') or nutrient based schemes; these schemes may be either non-interpretive or interpretive, which applies a relative ranking to the food or nutrient. The Traffic Light Label (TLL), an interpretive element created by the United Kingdom Food Standards Agency (UK FSA) consists of four key nutrients (fat, saturated fat, sugar and salt) in red ('high'), amber ('medium') or green ('low') as shown in Figure 2.3. The most commonly used nutrient-based FOPL in New Zealand is Percentage Daily Intake

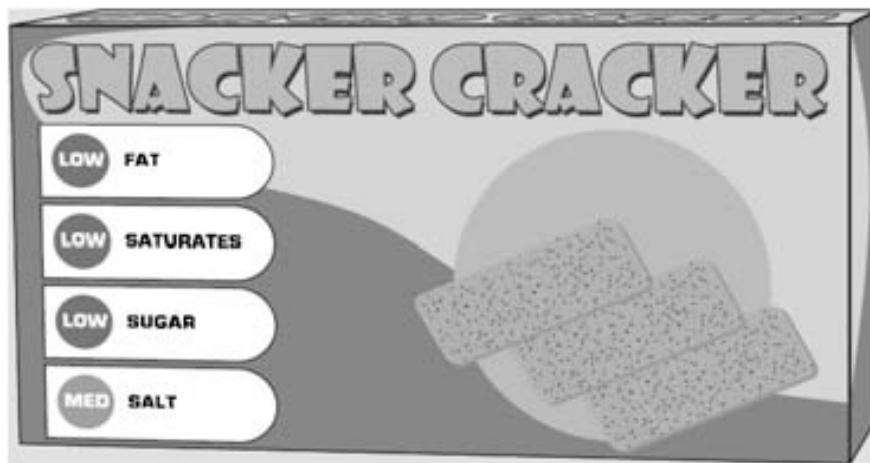


Figure 2.3 Example of a Multiple Traffic Light Label (TLL) on a package of cracker biscuits

This is a TLL depicting fat, saturated fat, sugar and salt in green ('low'), amber ('medium') or red ('high').

(Adapted from Gorton *et al.* 2006).

(PDI), which is calculated using the average New Zealand/Australian adult energy intakes (Maubach *et al.* 2009), as shown in Figure 2.4. PDI is non-interpretive, and some food manufacturers have voluntarily adopted this FOPL scheme within New Zealand and Australia since 2006.

National Heart Foundation ‘tick’

The National Heart Foundation (NHF) ‘tick’ is the leading signposting program in New Zealand, implemented in 1991 as a non-profit organisation, they aim to reduce harmful nutrients (e.g. saturated fat) and increase beneficial nutrients (e.g. fibre) within the food supply, and assist consumers with healthy food choice. The ‘tick’ requires products conform to specific nutrient cut-offs within each food category, and some food manufacturers have reformulated their products to achieve ‘tick’ status. Research on the effects of reformulation suggests that the ‘tick’ campaign has contributed to a significant reduction in the salt content of selected bread, breakfast cereals and margarines in the New Zealand food supply (Williams *et al.* 2003; Young & Swinburn 2002). However, the researchers noted that due to the limited number of products tested the impact of this sodium reduction on the population would be minimal. Benefits associated with the ‘tick’ include high consumer trust and awareness with a majority of consumers who state that the ‘tick’ influences their food decisions (Mhurchu & Gorton 2007).

Critics of the ‘tick’ campaign argue that the cost of manufacturers procuring the ‘tick’ is prohibitive, and that it does not feature on ‘basic’ or low cost brands frequently purchased by low-income individuals who have poorer health outcomes and would benefit most from an effective food labelling scheme. In 2008, a New Zealand focus group study that consisted of 158 Māori, Pacific Island, Tongan and low-income individuals, explored individuals’ understanding and use of the NIP, the National Heart Foundation ‘tick’ as well as alternative labelling formats. The researchers found that a vast majority of the 158 individuals noted that they did not use the ‘tick’ to aid food choice, and many cited the cost of ‘tick’ foods as a barrier. In addition, focus groups described time and habit as barriers to healthy food choice, and viewed the NIP as difficult to understand. Many participants in these focus groups stated they wanted more information on how to interpret labels with strong support from

NUTRITION INFORMATION			
Serves per package: 14			
Serve size: 50g			
	Quantity per Serve	% Daily Intake* (per Serve)	Quantity per 100g
Energy	898kJ	10%	1791kJ
Protein	5.3g		10.5g
Fat, total – saturated	9.8g 4.1g		19.6g 8.2g
Carbohydrate – sugars	26.3g 12.4g	14%	52.5g 24.8g
Sodium	178mg		355mg
*based on an average adult diet of 8700 kJ			

Ingredients: Cereals (58%) (oats, wheatgerm), sugar, fruit (12%) (sultanas, raisins, apricot pieces [apple, apricot, invert sugar, sugar, humectant (glycerol), dextrose, wheat fibre, vegetable fat, flavour, emulsifier (soy lecithin), colour (160(B)), acidity regulators (330, 332), maize starch], vegetable oils, coconut, glucose syrup, honey, sesame seeds, salt, sunflower seeds, cashew nuts, humectant (glycerol), flavour, preservatives (220, 223).

Figure 2.4 Example of recommended mandatory Nutrition Information Panel (NIP) with Percentage Daily Intake (PDI)

This is a NIP depicting the mandatory nutrients (energy, protein, fat, saturated fat, carbohydrates, sugars and sodium) in two columns, per serve and per 100g and PDI in the final column based on average adult energy intake of 8700kJ.

(TNS Social Research 2007)

participants for a simple, colourful label that they could easily understand (Signal *et al.* 2008).

Percentage Daily Intake

As early as 1997, FSANZ had considered the use of the interpretive element, PDI, on FOPLs to assist consumers' understanding of nutrition content. To evaluate understanding FSANZ conducted a focus group study of 27 participants, which included qualitative and quantitative components. The quantitative section consisted of a self-administered questionnaire that focused on participants' use of three different nutritional formats. The standard format expressed nutrient information as per serve (g/serve) and per 100g (g/100g). A PDI format expressed units g/serve and PDI instead of g/serve, and a supplement PDI label with all three units: g/serve, g/100g and PDI. Participants viewed five different types of food (baked beans, cheese, breakfast cereal, margarine and bread), and rated the healthiness of foods in either a single food evaluation or a comparison task of two similar foods, on a five-point scale. In addition, individuals reported the units of expression they used to rate a food. In the individual food task, participants ranked the fat, fibre, sodium, carbohydrate and saturated fat content of the food as high, medium or low. For the food comparison, participants stated which food they thought was healthier in terms of fat, fibre, sodium, carbohydrate and saturated fat content (FSANZ 1999).

Results from the FSANZ focus group study suggest that participants strongly liked the PDI format because they could easily relate it to their daily requirements, which may account for participants' use of the PDI format most frequently. However, when participants used PDI it did not improve the accuracy of their food evaluations. Some participants preferred the PDI supplement format whilst others found the amount of information overwhelming. Overall, participants preferred the control format, mainly due to its simplicity. Despite some subjects who found PDI to be meaningful, helpful and easy to use, FSANZ considered that PDI should only be included on a voluntary basis (FSANZ 1999). Although this study's explorative purpose, the findings yield strong support for a NIP format that participants can both easily and quickly relate to, and understand.

In 2006, in response to comments on the Nutrition, Health and Related Claims draft standard that consumers may be misled by nutrition content claims, FSANZ conducted a second study on consumer understanding of PDI and RDI label elements (TNS Social Research 2007). The study consisted of 51 face to face interviews with main or joint household shopper in both Australia and New Zealand. Interviewers questioned participants' on their thoughts and understanding on nutrition elements present on the mock products, including PDI. For example, participants viewed two mock products, a low fat yoghurt and low fat ice-cream, and were asked to evaluate which product contained more fat and energy. For the analysis, the researchers classed participants into two groups: capable NIP users and non-capable NIP users. Overall, participants experienced difficulty evaluating the PDI information for the first time, and required assistance or repeated attempts to gain confidence using the information. Many consumers found the PDI for energy confusing, and difficult to interpret, and were frustrated with the lack of PDI on other nutrients. When participants were educated on Recommended Dietary Intake (RDI), capable NIP users were able to translate this understanding to the PDI. In comparison, non NIP users struggled to understand PDI, despite repeated explanations, however some of these participants were from non English speaking backgrounds and lacked both the literacy and numeracy skills to evaluate the information. These findings suggest that PDI would not be an appropriate tool to reduce any potential bias caused by a nutrient content claim (TNS Social Research 2007).

The interpretive elements used in the FSANZ study were present on the Back of Pack (BoP). A simple FOPL that provides interpretation on the product has more recently been the focus of extensive research.

United Kingdom

In contrast to New Zealand, the UK FSA has initiated voluntary labelling of an alternate front of pack labelling scheme the TLL, with three TLL formats currently used by the majority of UK retailers and manufacturers.

In 2008, the UK FSA commissioned an independent group to undertake research on use and comprehension of TLLs to develop one FOPL format. The research consisted of large-scale qualitative, observational and quantitative work and included testing

consumers ability to evaluate the healthiness of individual nutrients, whole foods and to compare two similar foods. Results showed consumers performed best in the evaluation tests when they used one of two label formats: a FOPL that included TLL colours and text or a FOPL that contained colour coded GDA and text. The UK FSA concluded that consumers liked a FOPL that encompassed both formats and included TLL colours, text and colour coded GDA, which allowed consumers to evaluate the nutrition information in their preferred format (Food Standards Authority 2005).

Europe

It appears that several types of FOPLs may improve consumer understanding of the products' nutrition content Recent European research (Feunekes *et al.* 2008) evaluated the consumer friendliness (comprehension, liking and credibility) and usage intention of simpler (e.g. Healthier Choice Tick) and more complex FOPL formats (e.g. Multiple Traffic Light Label (MTL)). The study included 1630 participants across four countries that completed an online question. Comprehension of each FOPL format was measured by participants answering the following question, 'How difficult or easy is it for you to understand this health indicator' on a five- point Likert scale. The differences across FOPL formats were small, however the multiple TLL scored the highest for comprehension. The authors note the limitation of self reported comprehension; participants may have thought they understood a label when they did not, or preferred not admit a lack of understanding (Feunekes *et al.* 2008). A European review of fifteen EU countries and fifty-eight studies on nutrition between 2003 and 2006 concluded that most consumers like simplified FOPLs (Grunert & Wills 2007 p 1 para 1). Their preferences were dependent on 'conflicting preferences for ease of use, being fully informed and not being coerced into certain types of behaviour.' For example, some people like colour coding, but others report the orange and red colours as being too aggressive (Grunert & Wills 2007).

Australia and New Zealand

In Australia and New Zealand, four recent studies have assessed FOPLs and used both qualitative and quantitative methods. Three of the studies were face-to-face surveys and one consisted of focus group sessions. Recruitment for face-to-face surveys occurred in a public place (supermarket or mall) with several techniques used to ensure a range of individuals from different socio-economic and education groups.

Two New Zealand studies, a focus group and survey, specifically recruited ethnic minorities and lower income groups.

Three studies using qualitative methods explored consumer preferences for alternative FOPL formats. The study by Kelly *et al.* (2009) consisted of 790 individuals from New South Wales. Researchers conducted face-to-face interviews and surveyed individuals on perceived use and understanding of four FOPLs, which included a (i) monochrome and (ii) colour-coded PDI, (iii) TLL and (iv) TLL with an overall rating. Most participants favoured nutrition information to be present on FOPLs in a consistent format, and individuals perceived PDI as the easiest FOPL format to use (Kelly *et al.* 2009). In the study by Gorton *et al.* (2009), participants chose the label format they preferred; overall participants preferred the MTL (34 percent) followed by the NIP and the Single Traffic Light Label (STL), with PDI being preferred least (13 percent). Signal *et al.* (2008) explored preferences of alternate FOPLs in a focus group setting, individuals' voiced their opinions on TLLs, the food pyramid and the NHF 'tick'. Participants favoured the TLL more than the alternative label format presented, mainly because they found it easier to understand (Signal *et al.* 2008).

Three of the studies assessed understanding of FOPL formats using quantitative means. Maubach & Hoek (2008), assessed understanding of two FOPL formats, TLL and PDI, in caregivers and parents of children aged two to fifteen. Two hundred and ninety four participants randomly assigned to one of six groups viewed a mock cereal product that varied in nutritional profile (better or worse) and FOPL format (PDI or TLL), and rated the product in terms of fat, sugar and sodium on a five - point Likert scale. In contrast to control groups that viewed the NIP, groups that viewed either the PDI or TLL more accurately rated the better and worse cereal as significantly different. This effect was greater in the TLL groups, which suggests the TLL is more effective to consumers than PDI in healthy food choice (Maubach & Hoek 2008). Kelly *et al.* (2009) demonstrated similar results. Performance of four interpretive elements was tested; participants examined a food product with one FOPL variant, and evaluated the total fat, saturated fat, sugar and sodium content as 'a lot', 'moderate amount' or 'a small amount.' The results demonstrate that participants were three to five times more likely to correctly identify a healthier food with a TLL than a PDI format, despite consumers' perception that PDI was easier to use.

Moreover, examination of the TLL resulted in a significantly higher number of accurate nutrient assessments when they in comparison to the PDI format (Kelly *et al.* 2009).

The study by Gorton *et al.* (2009), tested preference and understanding of four nutrition label formats in ethnic minorities and lower socio-economic groups within New Zealand. Researchers assessed understanding by asking participants to calculate the total fat content and per serving sugar content of a food carrying a sample NIP. The researchers found that both STL and MTL were best understood, with the MTL format most preferred in comparison to conventional NIP and PDI across all ethnic and income groups. Use of TLLs resulted in the least disparities amongst ethnic groups than other FOPL labels tested (Gorton *et al.* 2009).

Overall, the studies support the usefulness of a FOPLs to aid consumers understanding of nutrition content and aid selection of healthy foods. In Australia and New Zealand, research suggests TLL to be well liked and understood, and the preferred format to recommend (Gorton *et al.* 2009).

One study (Rayner *et al.* 2001) explored forty-four Australian and UK consumers' real life use of three health claim endorsements (the National Heart Foundation of Australia 'tick', and Sainsbury's and Tesco healthy eating logo) during two shopping trips: when shopping normally and when asked to select healthy options. The researchers employed verbal 'protocol analysis', that aimed to elicit consumers' conscious thought processes when evaluating and making food choices. Participants were recruited if they were main household shoppers, and were matched for age and socioeconomic status for the national population. Researchers found that when Australian participants were asked to select healthy options, they never referred to the 'tick', in contrast to 43 percent of Tesco shoppers who did. This was surprising given Australian National Heart Foundation research that suggested 80 percent of grocery buyers use the 'tick' always, often or sometimes. After participants carried out the second shopping trip and selected healthy options they were questioned on their use of endorsements to assess how this differed from the results obtained via the verbal protocol in the first normal shopping trip. Participants' lower reported awareness of the 'tick' (38 percent) when shopping in comparison to Tesco shoppers (83 percent)

may partly explain why no Australian participant voiced use of the ‘tick’ endorsement. Another reason to account for this may be the differences in complexity of each claim type. The Tesco logo categorized foods into three groups (1) foods that contribute most fat to the diet (2) foods high in fat and (3) foods naturally low in fat, with different criteria for fat, saturated fat and sodium. In contrast, the National Heart Foundation of Australia ‘tick’ has a larger number of food categories, ten in total, each with different criteria for nutrients. However, for all three participant groups, declared use was significantly higher than actual use of health endorsements, with overall results suggesting that participants overestimate their actual use of health claims (Rayner *et al.* 2001).

2.4 Explicit health claims on food packaging

2.4.1 Regulation of explicit health claims

Explicit health claims refer to nutritional content or health related benefits.

Nutrition and Health claims are potentially powerful tools in consumer communication as they convey information on food characteristics (for example, ‘contains calcium’) and health related benefits (for example, ‘contributes to a heart-healthy diet’) that might remain unknown to the consumer (*Leathwood et al. 2007 p1*).

The Kellogg’s company conducted the first explicit health claim campaign in the US. The campaign focused on high fibre cereals, and the relationship between high fibre consumption and reduced risk of colon cancer. This campaign stimulated regulation of health claims in the US and ultimately resulted in the passing of the NLEA requiring FDA approval of health claims (Hasler 2008). Using information from the US 1985 and 1986 ‘Continuing Surveys of Food Intakes by Individuals’ Ippolito & Mathios (1991) concluded that health claims (high in fibre) were associated with increased consumption of fibre and enhanced knowledge of the relationship between a high fibre diet and the risk of colon cancer. They suggested health claims may facilitate healthy food choice and increase consumers’ health knowledge. More

generally, the NLEA has promoted a shift in food marketing and increased manufacturer use of claims related to health promotion (Calfee & Pappalardo 1991).

Since health claims appeared on breakfast cereals in the US, many countries, including the United Kingdom (Kwak & JohnJukes 2000), the European Union (EU) (Asp & Bryngelsson 2008), Japan (Yamada *et al.* 2008), Canada (RL'Abbé *et al.* 2008) and New Zealand and Australia (FSANZ 2008a) have allowed some reference to health claims on packaged food products. Currently, the 'Code' allows nutrient content claims (e.g. 'low in fat') and general health claims (e.g. 'high in energy'). However, FSANZ does not allow high level health claims, except those with specific approval e.g. maternal folate consumption and reduction in risk of fetal neural tube defects (FSANZ 2008b).

In 2003, the Ministerial Council agreed to a new policy for nutrition, health and related claims. This agreement provided FSANZ with a framework to develop a health claims policy that could be included in the 'Code'. The new policy's primary aim was to "aims to permit claims and encourage industry to innovate whilst ensuring consumers are not misled" (FSANZ 2008a p ii para 1). Proposal 293 set out the draft standard health claims – Nutrition, Health and Related Claims. It set out three levels of claims (nutrient content, general level and high level claims) as shown in Figure 2.5, which FSANZ submitted to the Ministerial Council in May 2008. In order to ensure that health claims were not misleading, the proposal set eligibility criteria and scientific substantiation for each claim, as shown in Figure 2.6. The first review of Proposal 293, initially expected in 2008, is due for release in October 2011 (FSANZ 2010a).

Since the passing of the NLEA in the US, there has been considerable debate on the merit of health claims as a strategy to support consumers' healthy food decisions (Williams 2005).

2.4.2 Prevalence of explicit health claims

In order for health claims be effective, consumers must have exposure to them (refer to Figure 2.2). The reported level of health claims in the US is low (Williams 2005). In

Nutrition content claims refer to the presence or absence of a component in food.

Description of the claim	Example
Nutrition content claims describe or indicate the presence or absence of a component in food.	<i>this food is high in calcium</i>

General level health claims refer to the presence of a nutrient or substance in a food and to its effect on a health function. They may not refer to a serious disease or condition or to an indicator of a serious disease (e.g. blood cholesterol). Health claims cannot be made on alcohol or infant formula. Manufacturers must hold records to substantiate such claims and produce these records, on request, to enforcement agencies.

Description of the claim	Example
General level health claims refer to...	<i>helps keep you regular as part of a high fibre diet</i>
...maintenance of good health.	
...a component and its function in the body.	<i>calcium is good for strong bones and teeth</i>
...specific benefits for performance and well being in relation to foods.	<i>gives you energy</i>
...how a diet, food or component can modify a function beyond its role in normal growth and development.	<i>exercise and a diet high in calcium helps build stronger bones</i>
...potential for a food or component to assist in reducing the risk of or helping to control a non-serious disease or condition	<i>yoghurt high in X and Y as part of a healthy diet may reduce your risk of stomach upsets</i>

High level health claims refer to the presence of a nutrient or substance in a food and its relationship to a serious disease or condition or to an indicator (i.e. a biomarker) of a serious disease. They cannot be made on alcohol or infant formula. Manufacturers must obtain pre-market approval from FSANZ to make high level health claims and provide scientific evidence to substantiate the claims.

Description of the claim	Example
Claim refers to the potential for a food or component to assist in controlling a serious disease or condition by either reducing risk factors or improving health.	<i>This food is high in calcium. Diets high in calcium may increase bone mineral density.</i>
Claim refers to the potential for a food or component to assist in reducing the risk of a serious disease or condition.	<i>This food is low in sodium. Diets low in sodium may reduce risk of elevated blood pressure.</i>

Figure 2.5 Description and examples of nutrient content, general health and high level claims

(FSANZ 2008c)

contrast to the US, there has been relatively little research on the prevalence of health claims in New Zealand and Australia (Williams *et al.* 2003; Williams 2006). In 2003 and 2005, FSANZ conducted a monitoring survey of the prevalence of claims on foods Australia and New Zealand (FSANZ 2007b). The 2005 FSANZ study found that 42 percent of all foods carried some type of claim, which was the same prevalence rate as the 2003 study. The proportion of claims found on Australian foods was slightly higher than foods analysed in New Zealand (44 percent vs. 36 percent), and is similar to the prevalence rate reported by Williams *et al.* (2003). In contrast to the three studies described, Williams *et al.*, (2006) reported a much lower percentage (14%) of all packaged foods evaluated carried health claims. Both studies by Williams *et al.* (2003; 2006) employed similar methodology, and the researchers recorded general level, nutrient content, implied and high level claims. However, in the 2006 study, the researchers analysed more categories (47 vs. 40), which may partly account for the change in the reported prevalence of claims, particularly as researchers found that a few food categories contained a high percentage of claims. For example, in the 2006 study, three categories (breakfast cereals, yoghurt and tea) comprised 62 percent of the total number of claims. In addition, the mandatory labelling of manufactured food products in 2002 in New Zealand and Australia may have prompted food manufacturers to reformulate their packaging to better match the nutritional content, and may also account for the lower percentage of claims on packaged foods reported by Williams *et al.* (2006).

Despite some discrepancies in the reported prevalence of health claims, all studies suggest a significantly higher prevalence of health claims in New Zealand and Australia than the US, with an estimated prevalence of 4 percent (Legault *et al.* 2004). However, health claims were more prevalent in the US when there was less Federal Drug Administration (FDA) regulation of health claims (Williams 2005). This change in prevalence suggests that regulation may reduce the number of claims, and restrict health claims to healthier foods.

2.4.3 Consumer understanding of explicit health claims

General Level Health Claims

- ❑ All general level health claims are either to be based on a list of nutrient function statements in Schedule 2 (the Scientific Substantiation Framework) to the Standard, a prescribed list of pre-approved food-disease relationships, a prescribed list of authoritative sources or a systematic review.
- ❑ Holding the records that substantiate these claims is the responsibility of the supplier of the food making the claim.
- ❑ Pre-approval by FSANZ of any general level health claims will not be required.

High Level Health Claims

- ❑ FSANZ has pre-approved the following food-disease relationships for use at the time the Standard will come into effect:
 - Calcium, vitamin D status and osteoporosis
 - Calcium and enhanced bone mineral density
 - Folic acid and neural tube defects
 - Saturated fatty acids and LDL-cholesterol
 - Saturated and *trans* fatty acids and LDL-cholesterol
 - Sodium and blood pressure
 - Increased intake of vegetables and fruit and coronary heart disease
 - A high intake of vegetables and fruit and coronary heart disease.
- ❑ Suppliers may use high level health claims based on substantiated relationships, subject to defined specific criteria and conditions.
- ❑ Any new food-disease relationships require pre-approval by FSANZ through the application process to vary the Code, so that they can be used as the basis for a high level health claim.

Figure 2.6 Overview of the substantiation required for general level and high level claims on food labels

(FSANZ 2008c)

Most research on consumer understanding of health claims has primarily been conducted in the US and Europe, with less research conducted in New Zealand and Australia.

Some studies have assessed understanding of health claims using qualitative methodology. This method has a number of advantages over quantitative research in that it employs techniques to uncover participants' motivations and actual behaviour in context of their personal experiences and social constructs (Leathwood *et al.* 2007). In 2002, following a European Commission report to regulate health claims, the UK FSA conducted a qualitative study on consumers understanding of four different claim types, that included simple 'functional' claims and more complex 'reduction of disease risk' claims. They found that consumers did not readily differentiate between the different types of claims, and instead evaluated the claims based on their individual knowledge and experiences, preferring short simple claims. For example, participants described the claim, 'proven to reduce cholesterol as part of a healthy diet' as straightforward, whereas participants considered the wordier 'Actively lowers cholesterol, shown to actually lower bad (LDL) Cholesterol' jargon and difficult to interpret (FSA 2002).

In contrast to qualitative studies, the majority of researchers who have assessed consumer understanding of health claims have employed quantitative methods, with most evaluating behaviour via self reported or experimental designs. In experimental studies, consumers typically examine mock food packages that display a health claim and then rate the health claim on a Likert scale. An important finding of the experimental studies reviewed was the influence of the health claim and the NIP on consumers' beliefs about the product (Keller *et al.* 1997; Roe *et al.* 1999; Kozup *et al.* 2003). Results from experimental studies have demonstrated mixed findings that suggest both independent and interdependent effects of health claims and nutrition information on consumer assessment of foods (Keller *et al.* 1997; Roe *et al.* 1999; Garretson & Burton 2000; Kozup *et al.* 2003).

Roe *et al.* (1999) examined the effect of health claims on how consumer searched for information, and identified four types of bias consumers reported in their interpretation of health claims. The first of these is a 'halo effect', where consumers rate the product higher for attributes not mentioned in the claim. They labelled the

second the ‘magic-bullet effect’, where consumers presume inappropriate health benefits.’ The third a ‘positivity – bias’ describes the phenomenon when consumers rate a product higher because a claim is attached to the product. Last was an ‘interactive effect’, where bias depended on the ambiguity of the nutrition information. Roe *et al.*, (1999) found an increased likelihood of a ‘halo effect’ when either a health claim or nutrient content claim was present. In a similar study, Andrews *et al.* (2000), found a positive bias effect when participants evaluated claims on print advertising of a soup product. There are several possible reasons why some health claims may result in positive associations with product traits not mentioned in the claim. One potential reason may be how consumers’ process health claims information. A ‘halo effect’ or ‘positive bias’ may occur as the participant cognitively processes the claim superficially. This superficial processing may trigger mental links to related ideas housed in their ‘associative network’ via a process of ‘spreading activation’. This superficial processing reduces cognitive effort and may explain the reduced time participants spent searching for information, when they viewed either a health claim or a nutrient content claim (Roe *et al.* 1999).

In contrast to Roe *et al.* (1999), some experimental studies have suggested health claims do not bias consumers’ perceptions of products (Keller *et al.* 1997; Garretson and Burton, 2000; Kozup *et al.* 2003). However, Keller *et al.* (1997) used forced exposure to the NIP, which may lack external validity and may not be the same as participants’ behaviour in a real life setting.

Most experimental studies on consumer understanding of explicit health claims have been conducted in the US, and as a result of differences in socio-demographic and cultural factors, these results may not directly translate to the New Zealand and Australian populations. FSANZ has conducted two experimental studies that assessed consumer understanding of health claims (FSANZ 2005a; Roy Morgan Research 2008). The most recent research from FSANZ is broadly consistent with international literature, which suggests that, in the presence of an NIP, nutrition content claims do not appear to enhance either product beliefs or purchase intention (Roy Morgan Research 2008). Earlier results from FSANZ (2005a) on the impact of nutrition content claims are conflicting, as most respondents report these claims would influence their purchase intention. However, these earlier studies may not be realistic

as they employed mock products with limited information FSANZ (2005a). In contrast, the most recent health claim study (Roy Morgan Research 2008) contained realistic 3-D packages that conveyed full package information. The 2008 study was also improved by a better study protocol, designed to mimic the supermarket environment.

Despite experimental studies having several advantages including allowing researchers to assess specific claims in a controlled setting, they are limited in their findings. How consumers interpret health claims in an experimental setting is very different from the conditions in a supermarket. It is likely that the amount of cognitive processing in the experimental setting was greater, due to greater motivation and time to assess products, in contrast to a normal supermarket trip. The mock products used are artificial and sampling is often selective. As a result, it is unknown how much of the findings from experimental work can be generalised to a supermarket setting, and it is likely that they may overestimate consumer understanding and the effects of health claims on product evaluation and choice. Further work is needed to assess how consumers interpret claims in real life setting (Leathwood *et al.* 2008).

2.4.4 Effects of explicit health claims on food product choice

Several consumer studies have suggested individuals use health claims frequently and find them to be useful when selecting products (FSANZ 2003, Chan *et al.* 2005). However, there is a discrepancy in the literature of actual versus reported use of nutrition information (FSANZ 2006; Rayner *et al.* 2001), that suggest that studies that use self - reported measures may overestimate the effect of explicit health claims on food product choice.

In conclusion, experimental studies suggest that consumers make broad rapid judgments on the healthiness of a product when they only view the health claims, and these judgments may not be supported by the nutrition content. This may be due to lower 'motivation to process [nutrition information in a supermarket setting] and [instead] place greater emphasis on the most easily accessible information such as promotional claim made on the front of the package' (Keller *et al.* 1997 p 3 – 4). Participants' experience and knowledge of health claims may facilitate mental links

with similar claims. Williams (2005) states that ‘once consumers are familiar with a nutrient disease relationship (e.g. calcium and bone health) a mere nutrient content claim may be interpreted as a health claim’ (Williams 2005 p4 para 3). This is consistent with the concept of ‘spreading activation’ where individuals build on ideas and group similar items together. As a result, consumers may come to associate different types of ‘health claims’ with similar effects via mental links (FSA 2002a, cited in Williams 2005). As consumers familiarize themselves with health claims, and associate similar ideas together, they may create mental links between health claims and implied claims, as they are both types of claims, and can indicate similar things. Researchers have suggested that regulation of health claims in the US has reduced the prevalence of claims on food products. However, stricter regulation may have increased the prevalence of less regulated ‘soft claims’, which consumers may interpret and use in a similar manner as health claims.

2.5 Implicit health claims on food packaging

Implicit or implied health claims are ‘statements, symbols, vignettes, or other forms of communication that suggest, within the context in which they are presented, that a relationship exists between the presence or level of a substance in the food and a disease or health-related condition’ (US Food and Drug Administration 2008), for example ‘wholesome’ bread. Regulation of implied claims in New Zealand falls under the Fair Trading Act (1986) and is administered by the Commerce Commission (2010). Standard 1.1.1 of the new ‘Code’ includes reference to implied claims. In doing so, the proposed draft standard attempts to capture all potential claims both explicit and implied. During the draft proposal of the new ‘Code’ FSANZ received several submissions of concern to the proposed regulation, including comments related to implied claims, and stating ‘the issue of whether or not a statement or graphic is in fact a claim is problematic’ (FSANZ 2008a Attachment 4 p 17).

There exists only two publications on consumer understanding of implied claims (Ford *et al.* 1996; Mitra *et al.* 1999) and two studies conducted by FSANZ (2005a & 2005b).

Ford *et al.*, (1996) tested whether health claims influenced participants' evaluation of nutrition information on a fictitious product. To achieve this, they used a 2 (presence or absence of claim) x 2 (ambiguous versus non-ambiguous nutritional information) x 2 (healthy product versus less healthy product) between-subjects factorial design on a fictitious frozen dinner meal. To achieve this design, the researchers used two versions of the front panel (with or without a claim), and four versions of the BoP that differed in ambiguity of nutrition information and healthiness of the nutrition content. The health claim version, displayed the claim 'does your heart good' with a picture of heart and an ECG, a supporting nutrition content claim 'low in cholesterol', and included the cholesterol content. In contrast, the no claim version displayed the statement 'ultimate in cooking convenience' with an image of a clock and supporting statement 'ready in minutes.' Clarity was manipulated by the use of two different NIP formats, one with absolute amounts of nutrients (ambiguous) and one with an interpretive element ('high', 'medium' or 'low') beside each nutrient (less ambiguous). Healthiness was manipulated by varying the absolute amounts of fat (8g versus 24g) and sodium (490mg versus 1865mg) content in the NIP (Ford *et al.* 1996).

Ford *et al.*, (1996) tested the claim, "does your heart good" which the researchers termed an explicit health claim; however, subsequent literature has referred to this claim ('does your heart good') as an implied health claim (Mitra *et al.* 1999). For the purposes of this review, this claim will be considered an implied claim, because it matches the description of an implied claim set by the US FDA i.e. a claim that suggests a relationship between the product contents and a health benefit (Mitra *et al.* 1999; US Food and Drug Administration 2008).

Researchers in the Ford *et al.* (1996) study recruited 325 participants, which consisted of undergraduate and graduate business students at a single university in the US. A pilot test of participants from the sample pool indicated that participants had similar interests in nutrition as the US population, however participants were not matched in any other demographics (Ford *et al.* 1996).

Participants examined two booklets in sequence. Booklet one contained the FoP branding information, and booklet two the BoP information that displayed the NFP. Once participants had examined each booklet, they were instructed to rank the

perceived health benefits (heart healthiness, fat, sugar and sodium content) on a nine-point scale according to the presence of the implied health claim, NFP or both the health claim and the NFP. Whilst carrying out this assessment, participants were allowed to view the BoP information, but were not allowed to view the FoP information (Ford *et al.* 1996).

Statistical analysis of the results indicates independent effects of the nutrition information and the presence of the implied health claim on consumers' judgment of the product healthiness. Crucially, when the implied health claim was viewed alone, it positively influenced respondents' ratings on heart healthiness. Furthermore, participants rated heart, fat and sodium beliefs higher for the less healthy product that displayed the implied claim. These findings suggest a 'halo effect' (Roe *et al.* 1999) whereby consumers attribute health benefits not mentioned in the implied health claim, and may potentially mislead consumers. Overall, the results indicate independent effects for the nutrition information and health claim on consumer product evaluation, but that an implied claim may result in consumers rating the product higher for variables not mentioned in the claim, or 'halo effect' (Roe *et al.* 1999). This is of concern to public policy makers as this suggests implied claims have the potential to mislead consumers.

Limitations of the study include the sampling of participants; all participants had some level of tertiary education, a level that may not be typical of average consumers. A study by Scott and Worsley (1994) has suggested that people with lower education levels are more likely to misinterpret a claim. Thus, the study by Ford *et al.* (1996) may overestimate consumers' understanding of nutrition information. The researchers did not note the time taken by participants to review the product information. Such information is important because research suggests that consumers' ability to evaluate food products is dependent on whether they engage in superficial or more systematic processing. Time is one factor believed to influence their ability to process nutrition information in detail (Leathwood *et al.* 2007). In addition, participants were instructed to view the front and back panel in sequence, and not in conjunction with one another. This is likely to have emphasised the front and back panels as distinct elements and may have biased the researchers' attempt to examine any interaction between the FoP claim and BoP nutrition content. Furthermore, when participants rated the product on health variables they were allowed to inspect the nutrition

information but not the FoP information, which the researchers did not attempt to explain. Another limitation was the design of the fictitious frozen dinner product's FoP and BoP, depicted in black and white, which may not have been representative of a manufactured food product. Finally, participants examined a FoP that displayed two types of claims (explicit and implied), and because participants were not questioned on their reasons for their product assessment it is unclear what effects can be attributed to the implied claim. Overall, the study limitations suggest that the results may not be applicable to a real shopping experience, and would suggest a need to conduct a similar study with a representative sample in a more realistic setting.

The second study by Mitra *et al.* (1999) extended the results of Ford *et al.* (1996). The sample design had similarities to the earlier study, however the study includes several important differences.

The study by Mitra *et al.* (1999) examined the effect of an implied claim on how consumers interpreted the nutrition information, and if educational status affected any observed interaction between the claim and nutrition content. The researchers defined educationally disadvantaged as individuals without a high school degree, and educationally privileged as those with a high school degree or more. In total, 410 participants were recruited from five U.S. cities, and contacted at home by trained interviewers. Sample quotas were set for education (disadvantaged vs. privileged), ethnicity (white vs. non-white) age (18-34 vs. 35-64) and gender with a 50: 50 ratio in each category. Participants' knowledge of fat and cholesterol was assessed using questions from the Health and Diet Surveys. Analysis of these nine questions suggests the sample had similar knowledge of fat and cholesterol as larger samples used in national surveys, and that educational status was significantly associated with knowledge of dietary fats and cholesterol (Mitra *et al.* 1999).

The study consisted of near identical product information as Ford *et al.* (1996) with front and back packaging of a frozen dinner testing the implied health claim "does your heart good" and an implied graphic—an image of a heart and an electrocardiogram. However, researchers chose to omit nutrient content claim 'low in cholesterol' on the front of pack, which Ford *et al.* (1996) had used. The researchers designed four versions of the back panel that differed in total fat, cholesterol, and

sodium content; the four versions included two extreme (very healthy, very unhealthy) and two intermediate nutritional profiles (Mitra *et al.* 1999).

The first study segment, a 2 (presence or absence of implied health claim) x 2 factorial design, examined the effect of an implied health claim on dependent variables (heart healthiness, fat, cholesterol and sodium content) and if this was modified by education level (without a high school education versus high school or greater). A similar result was reported to Ford *et al.* (1996); when the implied health claim information was viewed alone respondents rated significant positive effects on several health variables (fat, cholesterol and sodium content). In addition, the effect of the implied claim on health ratings was similar for both the more educated and less educated groups (Mitra *et al.* 1999).

In the study by Mitra *et al.* (1999), when both the implied health claim and NFP were viewed together, the implied health claim did not affect participants' evaluation of the four variables. Consumers were able to interpret the NFP and remain unaffected by the implied health claim, which suggests that an implied health claim does not bias the processing of nutritional information. However, when subjects ignored the NFP and focused on the implied claim, i.e. during superficial processing of information in a supermarket, some made assumptions on the products' healthiness that may not have been supported by the products' nutrient content (Mitra *et al.* 1999). This suggests that implied claims may negatively impact on consumers' ability to select healthy choices, and that stricter regulations on implied claims may be warranted to prevent misleading consumers.

In 2005, FSANZ undertook two studies (qualitative and quantitative) to gain further insight into consumers' understanding of health claims, including implied health claims. The qualitative study sample consisted of 69 Australian and New Zealand subjects; the 24 New Zealand participants were recruited from one major city (Auckland). Participants from each country were matched to population demographics, however the purpose of the study was to further understanding of claims, and not for the results to extrapolated to the wider population. The researchers covered several topics in the qualitative interviews. Topics included the role of government in regulation of health claims and consumer understanding of

explicit and implied health claims. Each interview contained questions relating to one or two topics to enable detailed answers for each topic (FSANZ 2005b).

In the qualitative study, the researchers questioned twenty participants on their understanding and views on implied claims via face-to-face depth interviews. Using seven different mock products that displayed implied claims, interviewers explored participants' views on each claim, suggested benefits, credibility of the claim and if participants required additional information to interpret the claim. The seven implied claims included a can of tomatoes with a 'healthy heart' claim, a heart symbol with ECG graphic; 'healthy teeth' chewing gum; 'boost' protein bar; 'sleep easy' night time tea and an 'osteofix' carton of milk (FSANZ 2005b).

The results suggest that participants product evaluations were strongly influenced by the accompanying implied graphics. For example, when participants examined the implied claim 'healthy heart', their positive interpretation was strongly influenced by the heart image (FSANZ 2005b).

Participants appeared to interpret each claim in the context of their experience and knowledge of the food product. For instance, some participants voiced scepticism of the healthy heart claim, because of their beliefs that tomatoes were good for you anyway or because they preferred fresh tomatoes over canned. In addition, the divergence in claim interpretation between Australian and New Zealand participants, suggested that differences in culture or socio-demographic factors may have influenced their product interpretation. For example, when individuals viewed the 'osteofix' implied health claim, Australian participants were more likely to believe the claim was directed towards older people, whereas New Zealanders were more likely to report that the product was catered towards children (FSANZ 2005b).

There was some evidence to suggest that the implied health claim resulted in a 'halo effect' whereby participants rated the product more positive for nutrients not mentioned in the claim (Roe *et al.* 1997). For example, when individuals examined the 'osteofix' implied health claim some participants believed the product to contain reduced amount of fat. This positive association may be misleading, and appeared to

stem from participants reported belief that most fortified milk products contain less fat.

The researchers noted that perceived credibility of the implied claims was associated with the perceived risk in consuming the food product. Risk included safety hazards or adverse health effects. For example, participants perceived the ‘sleepy time’ implied health claim to be the most credible of all implied claims they inspected, and consistently reported this product to be low risk, and that no harm would result from consuming it. In contrast, some individuals described the skeleton image accompanying the ‘osteofix’ implied health claim as ‘gruesome’, and were skeptical of the products’ efficacy at ‘fixing’ any bone condition (FSANZ 2005b).

Limitations of the study include unrealistic mock product design. The claims were depicted on black and white line drawings of food products that did not resemble manufactured food products front of packs. Furthermore, the stimulus materials did not contain any other product information, including the BoP ingredient list and NIP. Several participants voiced a desire to inspect the nutritional information, but were not able to because of this absence, which may have affected how they evaluated the claim. During the interview, the researchers were only able to record intention to inspect BoP information, and not observe actual behaviour. More realistic stimulus materials may have provided valuable information on how participants evaluated the implied health claims in context of mandated nutrition information, and would have been more comparable to a real life product evaluation (FSANZ 2005b).

The second study by FSANZ (2005a) included a more realistic product design than the earlier qualitative study, and respondents (526) were matched in age and gender to be consistent with Australian and New Zealand demographics. Via an online questionnaire, respondents rated the perceived health benefits and intent to purchase of a fictitious yoghurt. Four versions of the yoghurt bearing different claim types: implied brand claim, “Pro-bone”; implied graphic claim - a defined women’s thighbone; explicit general claim, “A diet high in calcium helps maintain strong bones. This food is high in calcium” and high level health claim, “A diet high in calcium helps reduce the risk of osteoporosis. This food is high in calcium.” were shown to respondents in random order. However, similar to their earlier study by

FSANZ (2005b) the mock products contained very little product information, including no NIP or ingredient list (FSANZ 2005a).

When participants evaluated the claims, over half the respondents attributed the benefits inferred by either the general or explicit health claim to the implied health claims (implied brand claim - “Pro-bone” and implied graphic claim - a defined women’s thighbone). No other health benefits studied (e.g. nutrient content “A diet high in calcium”) produced significantly different outcomes of the four claim types. This may be due to pre-existing knowledge of health benefits of dairy foods. Further prompting of respondents may have provided reasoning for this effect. In addition to studying the perceived health benefits, intent to purchase of the four different products was tested. No significant difference between claim types was found (FSANZ 2005a). The findings suggest that consumers may not distinguish between claim types the way policy makers regulate claims and that both brand-implied and graphic-implied claims are powerful tools for communicating health benefits.

In conclusion, the handful of publications on implied health claims suggest that when viewed alone the implied claim may inappropriately influence consumer perceptions of health benefits. Both studies by Ford *et al.* (1997) and Mitra *et al.* (1999) indicate that the NFP and implied health claim have independent positive effects on perceived health benefits, when viewed together the implied health claim had no significant effect on perceived health benefits. This viewing of both the NFP and implied health claim is not a routine process for consumers (Higginson *et al.* 2002). It therefore makes sense that the most recent study by FSANZ (2005a) suggests that though consumers are able to infer differences in key health benefits amongst three main claim categories (high level claims, general health claims and implied health claims) the purchasing intent does not differ between claims (FSANZ 2005a).

2.6 Natural claims on food packaging

2.6.1 Historical background

During the twentieth century the industrial revolution transformed our food supply from a reliance on local produce to one of dependence on processed foods (Fisher &

Carvajal 2008). In the latter half of the twentieth century consumers developed aversions to chemicals as a consequence of knowledge on chemicals and pollution, which has led to possible links between cancer and certain chemicals (Fisher & Carvajal 2008). In a New Zealand report (Worsley & Scott 2000) consumers ranked 'pesticides' in the top five of twenty-eight concerns and 'additives' in the top ten in two similar studies carried out in 1992 and 1994 suggesting consumers are concerned about the safety of our food supply (Worsley & Scott 2000). Amidst increasing global food safety concerns, consumers have desired more knowledge about the food they consume and have begun advocating for a strengthening of food label requirements.

Food marketers face ongoing pressure to differentiate their products from competitors (Fisher & Carvajal 2008). The use of the word natural in food marketing generally refers to a product that is less processed and healthier. Natural claims have for the last decade, enjoyed considerably popularity amongst consumers, and a recent study conducted by Mintel (2009) on the marketing of new and emerging foods, found natural claims to be ranked number one.

This surge in natural's popularity has occurred concurrently with developments in the natural food industry that have resulted in better tasting natural foods which display more attractive packaging that may have resulted in attracting a wider audience (Del Prete 1997). In addition, growth rates of natural retailers have tripled in comparison to the annual growth rate of conventional retailers in the last three years. This suggests price resilience of natural foods despite consumer concerns of an economic recession (Dairy Foods 2008).

2.6.2 Definition of natural implied health claims

There are a number of definitions for natural and several countries have guidelines on natural implied health claims, however only the United States Department of Agriculture (USDA) and the EU have regulations that pertain to natural claims.

The FDA, which has jurisdiction over all foods except for meat, poultry and eggs in the US, does not officially define the term natural despite several attempts to formally remedy this over the last two decades. In the 1970's, the FDA issued regulations

defining ‘natural flavour’ requiring flavour from natural sources to be declared (Fisher & Carvajal 2008). In 1983, the US Federal Trade Commission (FTC) unsuccessfully attempted to establish a definition for natural. In 1988, the FDA informally defined natural to mean, “nothing artificial or synthetic has been included in or added to a food that would not normally be expected to be in the food” (Fisher & Carvajal 2008 p 2 para 3). In 1991 the FDA, over growing concerns that natural was used to imply a variety of things on food products (Figure 2.7), proposed to consider a definition of natural. To accomplish this objective the FDA sought input from industry and consumers. In considering a definition for natural in 1991, stated a natural product is composed of substances “not manmade” with “nothing artificial or synthetic ...included in, or has been added to, the product that would not normally be there” (Hostetler 2008 p 1 par 4). Despite this concern, the FDA announced its verdict not to define natural citing resource limitations (Fisher & Carvajal 2008).

In recent years, the FDA’s lack of policy on natural has been met with criticism from consumer groups such as the Center for Science in the Public Interest (CSPI) as well as food industry (e.g. American Sugar Association). With no formal consensus on natural, food manufacturers have created their own often, conflicting definitions that may easily mislead consumers (Shlachter 2006).

In contrast to the FDA, the USDA includes the degree of processing of a product in their assessment of natural using a decision tree with two questions. They ask: (i) “Does the product contain an artificial flavor/flavoring, a colouring ingredient, a chemical preservative, or any other synthetic or artificial ingredient? If yes, then the product is not natural. (ii) Are the product and its ingredients only minimally processed? If yes, then the product is natural” (Fisher & Carvajal 2008 p 3-4).

The Canadian Food Inspection Agency provides guidelines on the definition of natural implied health claims. They note that a natural food should not have any constituent removed (with the exception of water); contain an added vitamin, mineral, artificial flavouring agent or food additive or have undergone a process that alters its original state. Within the guideline, they also detail the processes that they consider ‘minimal’ and processes that render maximum changes on the biological, physical or chemical constituents of the food product (Canadian Food Inspection Agency 2009).



Figure 2.7 Depiction of a variety of food products front of package labels containing a natural claim

(Adapted from Fisher 2008)

In 2002, The UK FSA developed guidelines on implied health claims that included natural implied health claims. These guidelines were designed to assist food manufacturers, in appropriate use of claims; consumers in providing consistent interpretation of each claim and provide enforcement agencies with information to challenge misleading claims (UK FSA 2002). They described natural implied health claims as follows:

“Natural” means essentially that the product is comprised of natural ingredients, e.g. ingredients produced by nature, not the work of man or interfered with by man. It is misleading to use the term to describe foods or ingredients that employ chemicals to change their composition or comprise the products of new technologies, including additives and flavourings that are the product of the chemical industry or extracted by chemical processes (UK FSA 2002 p 10 para 1).

Similar to the Canadian Food Inspection Agency guidelines, the UK FSA also note that traditional processes are acceptable in a natural food but that more invasive processing would render a product non-natural and a natural implied health claim would be inappropriate (FSA 2002b).

In New Zealand, a more appropriate definition of natural may be obtained from the New Zealand Commerce Commission that regulates natural implied health claims:

A “natural food” should not contain, or have ever contained, additives such as flavouring or colouring agents, preservatives, artificial or synthetic ingredients, or added vitamins or minerals. It should not have had any integral part removed or changed. Where food has undergone a form of processing that alters its intrinsic characteristics, it may be misleading to describe it as “natural”. Foods or food products that are labelled as genetically modified may still be misleading if the overall impression created by the packaging or promotion of the food suggests that the product is natural. (Commerce Commission, personal communication)

Overall, most agencies define natural implied health claims to describe a food that does not contain additives, specifically artificial ingredients, and is only minimally processed. The UK FSA and Canadian Food Inspection Agency have provided clear guidelines on how they define minimal processing. However, it is not clear from the definition proposed by the New Zealand Commerce commission or the US FDA what degree of processing that would render a product non-natural and exclude the use of the natural claim. This lack of clarity is problematic as it makes it difficult for regulators in challenging potentially misleading claims and consumers in interpreting natural implied health claims.

2.6.2 Regulation of natural implied health claims

Regulation of implied health claims in Australia and New Zealand falls under the Fair Trading Act (1986). The Act states that a claim may be misleading if the ‘average’ consumer misinterprets the claim. However little research has been conducted on what the average consumer understands from natural implied claims, and it is therefore difficult to challenge a potentially misleading claim.

An example of a misleading product claim relates to the marketing of an Australian product. In 2008, the Go Natural food manufacturer was instructed by the Australian Competition and Consumer Commission (ACCC, an organisation that ensures individuals and businesses comply with Australian fair trading laws), to amend packaging of a fruit based product deemed potentially misleading under section 52 of the Trade Practices Act, 1974, (Natur- all Pty Ltd n.d.). ‘Go Natural Apricot pieces in Yoghurt’ and ‘Go Natural Berry pieces in Yoghurt’ consisted of a fruit concentrate (approximately 35 percent), sugar (approximately 30 percent) and semolina (approximately 30 percent). The ACCC was concerned the product names implied an unprocessed fruit product in yoghurt; and ordered Go Natural to amend packaging and website descriptions of products as well as publish an article on their experiences for food industry (Australian Competition and Consumer Commission 2008.). In response to ACCC orders, Go Natural posted a response on their website in 2008 (that has since been removed). In the article, on their website, they state that they never intended to make an implied representation that breached the Trade Practices

Act (1974). The products were rebranded as ‘Apricot Frugos and ‘Berry Frugos’ (Natur- all Pty Ltd n.d.).

The example illustrated above is a clear breach of the Australian Trade Practices Act (1974). However, challenging natural implied health claims may prove more difficult in some instances due to a lack of a concise definition. This difficulty may be illustrated by the recent debate in the US on the ‘naturalness’ of high fructose corn syrup (HFCS), which is a cheaper alternative to sucrose. To produce HFCS, cornstarch is enzymatically converted from glucose and then fructose – a process the CSPI argues cannot be considered natural. An ongoing suit against Kraft Foods filed by the CSPI relates to the marketing, of an ‘all natural’ drink composed mainly of HFCS and some juice. The natural label suggests it is healthier than carbonated beverages, however, it is mainly composed of sweetener and water (Center For Science in the Public Interest 2007). The FDA still maintains that HFCS is a natural ingredient (Fisher & Carvajal 2008).

Misleading natural claims by manufacturers from cases such as these (HFCS and Go Natural) highlight the potential challenges in policing misleading claims. The ACCC and Commerce Commission, despite their best efforts, are ill equipped to deal with the plethora of potentially misleading claims on food products. While it is true that these watchdogs of fair trade prosecute some code violations, it is unlikely that they will be able to prosecute all offenders in their respective markets. Marketers have sophisticated and subtle strategies with an acute understanding of food laws. While manufacturers may not intentionally violate fair trading laws, their desire to sell their brands influences their marketing practices.

2.6.3 Consumer research on natural implied health claims

Despite ongoing confusion about the use of natural claims, there have been few studies that have assessed consumer understanding of natural implied claims (Rozin et al. 2004; Hill et al. 2007; Williams, PG et al. 2009; Choice 2004).

How do consumers perceive the word natural? In a report by Choice Consumer magazine, consumers in New Zealand associate natural with fewer chemical additives,

artificial preservatives, colours or flavours. A quarter of respondents stated they expected the product to be unprocessed or at least less processed. Respondents comments on the use of the word natural included, “not produced by an artificial process, contains no artificial additives, produced naturally” and “I assume natural products are a healthier choice” (Choice 2004).

A review of the literature yields two published articles on the consumer assessment of natural claims. The first study by Rozin *et al.* (2004) evaluated consumer preferences for natural. The more recent study by Williams *et al.* (2009) studied consumer understanding of natural implied health claims.

In the study by Rozin *et al.* (2004), the researchers employed a questionnaire of nineteen food (raw or processed) and medicinal items, and explored preferences for natural and the relative importance of instrumental and ideational beliefs. The researchers hypothesized that respondents’ preference for natural may be attributed to ideational beliefs, instrumental beliefs or a combination of ideational and instrumental beliefs. The ideational beliefs are a (i) preference for ‘normative order’ change or (ii) natural being inherently better. Instrumental beliefs relating to natural are described as: (i) natural is better because human involvement often causes damage to nature; (ii) natural items are healthier; (iii) a superiority due to sensory properties e.g. natural foods taste better’ or (iv) natural is more pure (Rozin *et al.* 2004).

The research conducted by Rozin *et al.* (2004) consisted of two studies. In the first study group of undergraduate business students, a natural food was described as ‘...one that had not been changed in any significant way by contact with humans. It could have been picked or transported but it was chemically identical to the same item in its natural place’ (Rozin *et al.* 2004 p 2 para 8). Students noted if they preferred the natural or processed versions or were indifferent, and indicated the foods they thought were healthier. In Study one, 32 percent of students had a preference for ‘natural processed food’ and 71percent rated natural as healthier. Results of study one indicate that a preference for natural is due to the moral or aesthetic properties of the natural food i.e. that it is inherently better, superior or more pure (Rozin *et al.* 2004).

The second study by Rozin *et al.* (2004) consisted of a group of undergraduate students and representative American adults, taken from a jury pool. The researchers found

that 74 percent of jurors and 61 percent of students preferred natural processed foods. The results suggested that when natural and commercial products are chemically identical a majority of participants who preferred natural continue to prefer natural with their beliefs on differences in taste and health demonstrating some influence (Rozin *et al.* 2004). The study provides insight into consumer preferences for natural but did not attempt to define the term natural.

The study by Williams *et al.* (2009) evaluated Australian consumers understanding of natural implied health claims on manufactured food products. Part one of the study involved the researchers conducting a convenient sample of nine large supermarkets and three health food stores in Wollongong and Sydney Australia for food products that displayed natural claims. When searching for natural claims they included brand names that included the word natural or a derivative of natural. When they noted a natural implied health claim, they recorded the wording of the claim, any related claims and the ingredient list. Their results suggest a wide variety of ingredients in natural foods, with some ingredients listed that may be in violation of Australian guidelines on natural claims due to their significant alteration from the original biological, physical or chemical state. Examples include modified starch, acesulfame-K and sodium benzoate (Williams *et al.* 2009).

The results of the supermarket survey were collated and the ingredients were used to develop a questionnaire that listed twenty-five ingredients commonly found on food products that displayed natural implied health claims. Using the questionnaire participants were asked whether each ingredient was acceptable in a natural food ('yes', 'no' or 'not sure'); and were queried as to why they considered some ingredients unacceptable. Participants were recruited via a convenient sampling method from a weight-loss clinic, call centre, credit union and non-academic staff at the University of Wollongong. A total 494 participants were invited to participate and 119 individuals (21 percent male, 77 percent female) agreed to participate in the study (response rate of 24 percent). When participants inspected the ingredients there was some consensus on some ingredients, for example 80 percent of participants noted that wholemeal flour was a natural ingredient, however for 19 of the 25 ingredients tested there was no clear consensus if the ingredient was natural. For most ingredients examined in the

questionnaire, the researchers noted no significant variation between genders, age groups or levels of education (Williams *et al.* 2009).

When participants were asked why specific ingredients were unacceptable, four main reasons were reported: degree of processing, artificial ingredient, a lack of familiarity and quantity of ingredient. Some participants reported a close association between processing and artificial ingredients and noted that an ingredient was artificial if it was obtained by an overly processed method (Williams *et al.* 2009).

In conclusion, natural implied health claims are used frequently by food manufacturers to advertise a products benefits or promote a brand. However, different manufacturers may use a natural claim to imply different meanings in different products, which may lead to consumer confusion on the meaning of natural. There are few studies that evaluate consumers' understanding of natural claims. The available studies suggest that natural claims induce strong product beliefs with consumers inferring benefits that may not be supported by the nutritional content.

3. Methodology

3.1 Qualitative methodology

3.1.1 Introduction

The study aimed to explore participants' understandings and the effects of natural implied claims on food product evaluation and food choice. It is important to note assumptions made early on in the study design. Quantitative research is well suited to testing hypotheses, evaluating outcomes and clarifying the effects of risk factors, and is the most often used type of design in nutrition research. However, when knowledge is limited about a topic and the phenomena are not easily measured, the best approach is qualitative research (Harris *et al.* 2009). This is important for this study, as it is concerned with uncovering individuals' beliefs and the reasons underlying specific behaviour. Moreover, qualitative research is particularly suited to nutrition research, where human behaviour is an important determinant of health status. In addition, good qualitative research is similar to good quantitative research, in that it relies on 'thorough planning, and methodical implementation, with special attention to validity, reliability, and relevance' (Harris *et al.* 2009).

In contrast to most quantitative research, with methodology that is underpinned by positivism and an emphasis on facts (Bogdan & Biklen 1998 p 22), qualitative research often reflects a phenomenological perspective. Phenomenology attempts to understand 'the constructs people use in everyday life to make sense of their world' and to uncover 'meanings contained within conversation or text' (Ritchie & Lewis 2003 p 12). Such an approach has been adopted in this study because it is not concerned with gathering data on absolute truths but rather detailed accounts of participants' subjective perspectives.

There are several different traditions of qualitative analysis that differ in their aim and focus of study. These range from descriptive accounts to analytical interpretations. Because the study was interested in developing theories to explain individuals' understanding of natural implied health claims, grounded analysis was considered

most appropriate. Grounded analysis involves the researcher generating descriptive and conceptual categories, based or 'grounded' in the empirical data to develop grounded theory. Qualitative researchers consider Glaser and Strauss' (1967) text on grounded theory groundbreaking because it focuses on the generation of new ideas instead of verification, and is one of the primary resources we used for the data analysis (Ritchie & Lewis 2003).

Historically, scientists often considered qualitative analysis a collection of haphazard methods that resulted in chance discoveries. This belief may have resulted in part from poor accounts of the methodology employed in earlier qualitative studies. However, this is changing with qualitative researchers better documenting their different analytical approaches and methods in their studies. In keeping with this, the following section outlines the study's assumptions, and the reasons underlying these decisions, at each step of the study design (Ritchie & Lewis 2003).

3.1.2 Data collection

Qualitative research attempts to investigate a topic in a naturalistic setting, because it is chiefly concerned with understanding how people act and think in the context of how their everyday lives relate to the research question. This study's qualitative methodology consisted of techniques that allowed elaboration of personal beliefs and motivations in food choice. The researcher used both structured and semi-structured open-ended interview protocols that allowed individuals to express their opinions and beliefs and resulted in a rich, detailed account of their experiences.

Unlike quantitative research, where the goal of sampling is a representative sample, in qualitative research a purposive sample is often used, which maybe defined as the 'intentional selection of a sample based on some characteristic' (Harris *et al.* 2009). Instead of a randomized sampling, this study employed theoretical sampling (Glaser & Strauss 1967). The primary goal of the sampling decisions was to generate theories to explain participants understanding and the effects of natural implied health claims on food choices, and not to produce a statistically representative sample. Instead, the adequacy of the sample is judged by the researcher, based on the type of theory that the researcher intends to develop (Glaser and Strauss 1967).

Researchers conducting qualitative research cannot completely eliminate the ‘observer effect’ that occurs when attempting to study natural behaviour in a setting with an observer present. However, the researcher attempted to reduce this bias by a number of decisions. Firstly, interactions with participants in an unobtrusive and non-threatening style helped the researcher ‘blend into the woodwork’ (Bogdan & Biklen 1998 p 35). Secondly, to relax the participants the researcher conducted the interviews in a participant selected venue (most often their office), and to develop rapport began the interview with a few introductory ‘warm up’ questions. Thirdly, the researcher structured questions in a non-judgmental framework, and gently probed for clarification on participants’ understanding. The semi-structured approach (as opposed to a formal question and answer session) facilitated a more conversational dialogue in which individuals could freely express their thoughts. Observer bias is not usually a central consideration for qualitative researchers because the researcher is always the instrument of data collection and data analysis. Instead of focusing on reducing bias, the researcher tries to make biases visible by being reflexive or conscious of their own motives and views before interpreting their participants’ words.

Grounded analysis employs a technique termed theoretical sampling, which is a ‘process of data collection for generating theory whereby the analyst jointly collects, codes, and analyses [the] data and decides what data to collect next.’ (Glaser & Strauss 1967 p 45 para 1). The researcher modifies and refines the initial categories generated throughout the coding and analytical process. The researcher judges when to stop data collection when theoretical saturation occurs that is when there is cessation of additional properties of categories. As a result, in the present study, the researcher could not assert at the start of sampling the precise number of individuals they would interview. However, the time consuming nature of qualitative analysis together with the fixed length of the MSc project, the researcher considered it prudent to limit the number of participants to a maximum of fifteen.

There are several ways to approach qualitative data analysis. Researchers develop theories as ‘a strategy for handling data in research’, and ‘providing modes of conceptualization for describing and explaining’ the results (Glaser & Strauss 1967 p 3 para 2). For the purposes of this study design, the researchers considered grounded theory appropriate. Grounded theory is theoretical explanation that emerges from

interpretation of empirical data, in contrast to theory generated according to *a priori* assumptions. There are several benefits to choosing grounded or comparative data analysis. Because the theory has been systematically generated from empirical fieldwork, the resulting categories and hypothesis are meaningful and better able to explain the behaviour under study. Furthermore, theory grounded in data, has longevity; it cannot easily be replaced by another theory, since it is closely linked with the data, but only modified upon further study. Another benefit of grounded analysis is forestalling the use of ‘exemplifying’ whereby the researcher has developed theory first and then found examples after the theory has been developed, to confirm the theory. Exemplifying would hinder the generation of new theory appropriate to the contours of the empirical data, and instead place an emphasis on data selection (Glaser & Strauss 1967).

To accomplish this task of grounded analysis, Glaser and Strauss (1967) advise a systematic discovery of knowledge from examination of the data, which they term the ‘constant comparative method’. This method entails the researcher collects, codes and analyses initial transcripts to generate categories, and then repeats this process with subsequent transcripts to refine and modify the initial categories. In contrast to quantitative data analysis in which coding and analysis are usually discrete linear events, the constant comparative method is iterative and involves ‘joint coding and analysis’, and uses explicit coding and analytical procedures’ (Glaser & Strauss 1967 p 102 para 2). Early stages of a study involve more collection than coding and analysis and toward the end this shifts to mostly analysis with minor collection and coding to wrap up the analysis (Glaser & Strauss 1967).

The first step in grounded analysis involves development of descriptive categories, by coding each data chunk into as many potential categories as possible. This process begins to generate theoretical properties but it also serves to index the data into a manageable form that can easily be traced (Glaser & Strauss 1967; Mason 1994). A transparent indexing system is vital for analysing the volume of data collected. During this process, when a researcher finds discrepancies in the initial categories, they record memos of these thoughts, which will be used later to develop the argument. As properties of categories begin to emerge, each new data chunk is compared to the category as a whole, and properties become more integrated. Integration forces the

researcher to make ‘theoretical sense of each comparison’ (Glaser & Strauss 1967 p 109 para 2). As the researcher progresses in the analysis, the theory solidifies as fewer modifications are made to categories and their properties. Moreover, there is reduction in the number of categories initiated, as common traits in the original categories allow for creation of a smaller number of higher level concepts.

In grounded analysis, there is a constant shifting back and forth between the original transcripts and the developing concepts and emerging themes, to check assumptions, to determine if the concepts match the data set, and to search for new clues. Such constant moving back and forth between the data set and concepts helps refine the analytical account (Ritchie & Lewis 2003).

Grounded analysis can be used to develop two basic types of theory: substantive and formal. Substantive theory refers to theory developed for one area e.g. consumer comprehension of food labels or nutrition education. Formal theory relates to a conceptual area of inquiry e.g. education. Both types of theory should be grounded in the lived realities of everyday. Applying a formal theory directly to a substantive area can result in a forcing of data, and failure to develop emerging concepts. Instead, Glaser and Strauss advise first developing substantive theory, which then can be used to generate new formal theory (Glaser & Strauss 1967 p 32-34). This study aims to develop substantive theory.

Tests of reliability in qualitative and quantitative research differ, because of underlying differences in methodologies. Quantitative research is concerned with reliability, with an expectation that different researchers analysing a piece of work would produce the same results. Reliability in qualitative research cannot be measured with this criterion. This is because different researchers differ in their theoretical perspectives (e.g. a sociologist versus an anthropologist), which affect the study structure, and the information they collect (Bogdan & Biklen 1998). Reliability in qualitative data analysis is concerned with the robustness of the research, which is supported by conducting internal validity checks on interpretation, by informing the reader of the decisions made during analysis, and by providing a detailed account of the research process. This study protocol was designed to allow respondents to recount their experience on food product evaluation in detail, to conduct the analysis

consistently, and to provide evidence for the interpretation described, to enable the reader to understand the method of enquiry the researcher employed (Ritchie & Lewis 2003).

During data collection, the research student listened to each transcript multiple times, to assist with consistency of the transcribed results. Although one researcher was responsible for all the data analysis, regular meetings with her qualitative methodology supervisor served as a frequent consistency and validity check, to review steps taken and decisions made throughout the analysis process (Harris *et al.* 2009). The consistency and validity checks led us to conclude that the second researcher could reach the same interpretation as the primary researcher if the data were reanalysed.

Validity or ‘correctness’ in qualitative research is concerned with the degree of accuracy that the researchers have represented and interpreted the phenomena under investigation. Structuring our data collection as depth interviews resulted in the collection of a rich data set, which increases the probability of validity (Harris *et al.* 2009). Moreover, the study used the constant comparative method as a test for internal validity. This involved the generation of a set of concepts from different parts of the data set; the researcher then iteratively tested each concept for validity by constantly comparing it across the data set (Glaser & Strauss 1967; Ritchie & Lewis 2003). Furthermore, during the analysis the researcher integrated exceptions into the analysis to mitigate investigator bias (Harris *et al.* 2009). Throughout the descriptive and conceptual analysis, the researcher consulted on the decision made with her qualitative methodology supervisor. This consultation step ensured that they could arrive at the same conclusion, which also served to increase validity (Harris *et al.* 2009).

Originally, this study was intended to be a mixed methods study. However, midway through the qualitative analysis, the researcher considered a more in depth qualitative analysis would be beneficial to exploring participants understanding of natural implied health claims on food product evaluation and food choice, and instead added a further phase of qualitative research.

3.2 Qualitative methods

3.2.1 Study design

There is limited research on consumer understanding of implied health claims or natural implied health claims. The available literature on natural implied health claims suggests that consumers place significant value on natural claims (Rozin *et al.* 2004). This study was designed to ask participants to reflect on their real life experiences. The research question was exploratory and asked, “What consumers understand about natural implied health claims and effects of natural implied health claims on food product evaluation and food choice.”

Phase I

To assist with a more detailed exploration of participants’ thoughts and experiences the interviews consisted of in-depth interviews instead of focus groups. Ethics approval was obtained prior to recruitment of participants commenced, to conduct the research protocol with human subjects.

The Masters candidate conducted recruitment using a purposive sampling method via a poster advertisement on campus and through campus wide emails to all individuals who either worked or studied at the University of Otago. Recruitment was also conducted with health professionals in one outpatient centre at Dunedin Hospital, however this did not yield any participants. Individuals, who answered yes to the statement, ‘you have consumed breakfast cereal in the last six months and are the main or joint supermarket shopper in your household’ were eligible to participate in the study. The researcher obtained informed consent from all participants and conducted interviews during August 2009. The questionnaire protocol was structured and questions progressed from broader open-ended questions to specific questions (refer to Appendix II). Participants were asked demographic questions (age, gender, race, highest level of education attained and no of children under 15) at the end of the interview. Recruitment ceased when thematic saturation was reached and there were no new insights from interviews (Daly *et al.* 2007). Interviews were audio recorded with subject consent, and lasted between 25 minutes to 1 hour and 30 minutes. Each subject received a \$20 voucher as a token of appreciation for participation in the study.

Phase II

Prior qualitative and quantitative research conducted by FSANZ (2005a & 2005b), suggests that implied claims and explicit health claims have similar effects in conveying information on health benefits to consumers. The qualitative research explored how consumers view implied and explicit claims. However, they did not explore in detail how participants viewed the two types of claims in comparison to one another. In Phase I of our study, we did not explore this topic. The interview protocol in Phase II was semi-structured and aimed to explore the personal meanings of both explicit and implied health claims, for these three participants on manufactured food products. Interviews took place in October of 2010. Interviews were audio recorded with subject consent, and lasted between 25 minutes to 45 minutes in length. Each subject received a \$10 voucher as a token of appreciation for participation in the study

3.2.2 Study sample

Phase I

Participants were recruited via a purposive sampling method, and consisted of University of Otago staff or students that were able to attend an interview on campus. Nine women and one man were interviewed (refer to Table 3.1); eight were of European descent (NZ European, British, American or European), one NZ Māori and one NZ Other, with a wide variation in ages.

Phase II

Similar to recruitment in Phase I, the sample was selected using a purposive sampling method. Three female participants who participated in Phase I interviews were asked to participate in an in-depth interview on health claims, and all three agreed. These participants were Beth, Hazel and Giselle.

Table 3.1: Demographic profile of participants

Pseudonym	Age	Gender	Ethnicity	Education	No. of Children
Anne	52	Female	NZM/NZE	c	2 (part time)
Beth	63	Female	NZE	c	0
Caroline	59	Female	NZE	c	0
Dianne	50	Female	NZE	e	0
Elisabeth	37	Female	British	e	0
Faith	58	Female	NZE	b	0
Giselle	21	Female	NZO	b	0
Hazel	32	Female	NZE	d	1
James	34	Male	American	e	0
Kirstin	34	Female	European	d	1

Ethnicity: NZE = New Zealand European; NZM = New Zealand Maori; NZO New Zealand Other

Education: a = <3 years secondary school; b = 4–5 years secondary school; c = apprenticeship or trade training; d = Bachelor's degree; e = postgraduate degree.

3.2.3 Data collection

Phase I

Due to the limited qualitative research on implied health claims within New Zealand, the interview protocol was developed based on two large scale qualitative studies on implied health claims conducted by the UK Food Safety Authority (UK FSA 2003; UK FSA 2007). A sample of the structured interview protocol is available in Appendix II. Time limitations did not allow for a trialing of the interview. Instead, feedback gained from the first two interviews was used to improve the interview design, with only slight alterations made to the interview protocol.

The researcher approached a graphic designer to design a fictitious product for the project, and obtained funding through the Department of Nutrition. A breakfast cereal was designed to stimulate participants' reflections on real life experiences. Breakfast cereal was chosen for three reasons: (1) breakfast cereals show considerable variation in nutrition content, (2) nutrition claims are frequently made by food manufactures on cereals (Williams *et al.* 2006), and (3) consumption of cereals is relatively high within New Zealand. Six mock cereals were designed, which consisted of two muesli cereal variants (tropical muesli and berry muesli) that displayed either a natural implied health claim ('Full of Natural Goodness' and '100% Natural') or no claim (control). All cereals contained the mandatory information required for food products, as defined by FSANZ in the food standards 'Code'. The two cereal variants were based on actual muesli cereals ('Hubbards Berry Berry Natural' and 'Hubbard's Fruitful Light') present in New Zealand supermarkets, with ingredient lists exact replicas of a berry muesli and tropical muesli that featured natural implied claims. The NIP was based on a natural muesli cereals' nutrition profile, modified to meet the NHF criteria for a healthy muesli-based cereal (NHF 2009). All cereals included an identical NIP. Two muesli variants were created to assess if participants responses varied based on the cereal variant. A sample of all mock breakfast cereal FoP and BoP designs is available in Appendix III.

The interview protocol consisted of three parts. Part one, a 'warm up' explored participants' supermarket habits. Part two, a mock cereal component in which participants viewed and answered questions that related to a natural and control mock

cereal. Lastly, part three, where the researcher explored participants' understandings of five implied claims (natural, wholesome, pure, unprocessed and raw).

During part two of the interview protocol, respondents were given an A4 card that depicted the control or natural mock cereal, and contained FoP and BoP product information (refer to Appendix III). Participants examined the 'control' and natural muesli based cereals first separately and then in unison. The two muesli variants (berry and tropical muesli) and natural claims ('100% Natural' and 'Full of Natural Goodness') were rotated so that approximately equal numbers of participants viewed each mock cereal variant.

Phase II

The Phase II interview protocol was based on evidence from the literature on implied health claims, and attempted to explore areas of participants' understanding of health claims not covered in Phase I. A semi-structured interview protocol was employed that consisted of three parts. Part one of the interview protocol included an introductory section that described in simple terms the current FSANZ definitions for both implied and explicit health claims. Definitions for each claim type were illustrated using examples of explicit and implied health claims on manufactured food products present in New Zealand supermarkets. Part two of the interview protocol examined in detail three different aspects of participants' understanding of implied and explicit health claims. Each of the three questions referenced implied and explicit claims present on one of three food product categories: cracker biscuits, rice crackers and baked muesli bars. These food types were chosen in response to an informal survey of claims on supermarket foods, which found health claims commonly displayed on all three product categories. A sample of the interview protocol is available in Appendix IV.

3.2.4 Data handling

Phase I

The researcher transcribed the interviews verbatim, and checked the transcripts against the audio recordings for accuracy. Transcription began once the first interview

was completed and was completed by the Masters candidate. Audio recordings were listened to a minimum of two to three times to ensure accuracy of transcription.

Phase II

The three in-depth interviews were transcribed by a transcription service. The Masters candidate verified the accuracy of these transcriptions by reading each transcription in conjunction with listening to the audio recording, and made amendments to the transcription when any errors were noted.

3.2.5 Data analysis

Descriptive coding and analysis

Phase I

The research student listened repeatedly to the transcriptions set to immerse herself in the data set, and began to generate initial descriptive codes during transcription. Descriptive coding comprised three levels, which are described in detail below:

Level one

Data were read repeatedly for the researcher to achieve immersion in the data set, and then each transcript was read word for word to systematically begin coding by first capturing concepts or key ideas that emerged. The smallest piece of information used during the qualitative analysis process is called a data extract, sometimes also called a data chunk or bibbit.

Initially, two transcripts were coded to generate descriptive category codes (descriptive codes), and these codes were applied to the entire data set of ten transcripts.

Descriptive coding was performed manually by tagging each data extract with an initial code. As many potential descriptive codes were used as necessary to code each data extract, and data extracts were coded multiple times if they matched more than one code. Additional descriptive codes were added when a bibbit did not fit in an existing category, and pre-existing descriptive codes were modified according to the emerging data. Descriptive codes were then reviewed against the data set; some codes were condensed or modified whilst others were split into further codes. In total

approximately sixty descriptive categories were formed. Next, the bibbits were moved into corresponding descriptive categories, and all bibbits were manually indexed. For example, AA 7/25 is an index that refers to participant AA and page seven of twenty-five of the interview transcript. Descriptive categories that contained similar ideas were housed together in five overarching descriptive categories. All indexing and coding of the data set was performed manually, either in notation in the margins or using track changes in the word document. This process comprised level one of descriptive analysis, which allowed a systematic coding of substantive topics that emerged during the interview process into a format that was easily retrievable for subsequent analysis. Throughout the analysis process there was a constant shifting back and forth between the entire data set, the data extracts chosen, and the written analysis being produced. Detailed notes, indexing and organisation of each step in the analysis also served as an audit trail.

Level two

In level one descriptive categories, each category was comprised of ten summaries for each participants' response. To create level two descriptive categories, level one descriptive summaries were read iteratively and an overall summary was generated that reflected the contours of all participants' responses for each descriptive category code.

Level three

Level two descriptive summaries for each category were summarised into overall summaries for each overarching category. This provided a snapshot of participants' accounts and distilled participants' comments into a core set of descriptive codes that are relevant for the second step of the analysis: conceptual analysis.

Conceptual coding and analysis

Phase I

The conceptual coding process initiates the conceptual data analysis. Concepts within the descriptive summaries that were relevant to the research question were identified. Initial conceptual category codes (concept codes) were used to index bibbits from level one and level two of the descriptive categories. New concept codes were created when

bibbits that did not fit into the initial codes. Codes were modified several times during the coding process based on the emerging concepts to ensure that they fit the data. Bibbits that related to each concept code were manually tagged and moved to the corresponding conceptual categories, and manually indexed according to the participant code and page number in the transcript. Initially nine conceptual codes were generated, which was reduced to six conceptual codes at the end of the conceptual analysis.

Similar to the descriptive coding process, each concept was grounded in participants' accounts. However, in contrast to the descriptive coding process, conceptual analysis only included data extracts that were relevant to the research question and were useful in developing a theoretical framework. Conceptual codes were sorted and integrated into a conceptually meaningful framework (Ritchie & Spencer 1994).

It is important to note that both the descriptive and conceptual categories are useful entry points to begin the analytical process, however the process of developing both descriptive and conceptual categories are mainly descriptive procedures, and do not represent the analytical process or outcome (Mason 1994).

Concurrent with the processes of descriptive and conceptual coding, the researcher also began the process of memo taking. This involved short hand notation of thoughts and linkages between the coded bibbits and the research question, and recorded as analytical notes in the margins of descriptive or conceptually coded bibbits. As new reflections or ideas emerged, the memos were added to or modified. Additions to memos were dated, to ensure an accurate record of how each memo had been generated, and allow for a clear audit trail of the analysis.

The process of memo taking was a vital step in progressing the analysis from a simple descriptive account of participants' experiences to an analytical discourse, and served as a starting point to develop the conceptual framework.

Once conceptual coding neared completion, all memos that were recoded were collated and housed in a separate file. Initially the memos serve to expand on ideas and linkages in the emerging data. At this stage in the analysis the data set can appear

unwieldy and fractured. The next step involved sorting the memos to search for underlying themes, which also unifies the framework. Each memo was sorted and expanded on. This sorting and expanding generated further memos and resulted in a rich set of notes to be used in developing the conceptual framework. Expanding on each memo involved reflection on participants' comments and a shifting back and forth between the coded data and memos; this process was made easier as the research student had recently completed coding and was fully immersed in the data set. It is important to note that whilst memo developing is a highly creative stage in the analysis, it is still grounded in the substantive accounts from participants.

Phase II

Data extracts from Phase II in-depth interviews were coded for conceptual codes that had emerged during the Phase I analysis.

Manual indexing included participant code, the page number of transcript and qualitative phase. For example, AA 1/18/#2 refers to participant AA ('Anne'), page number one of eighteen and Phase II of the qualitative in-depth interviews. Interviews were coded according to the pre-existing concept codes and the conceptual framework generated from the analysis of Phase II interviews. Additional concept codes were created when a bibbit did not fit into an existing category. Bibbits that related to each concept code were manually indexed and housed in each concept category.

The codes and memos developed during Phase I and Phase II were collated and used in the next stage of the analysis: generating a conceptual framework.

Conceptual framework

In grounded analysis, the descriptive categories and concepts are the foundation of the developing theory (Glaser & Strauss 1967). To construct a conceptual framework relevant ideas, linkages and explanations generated from memo development are woven into the conceptual ideas generated in the descriptive and conceptual analysis process (Ritchie & Spencer 1994). This process results in a delicate web like framework that preserves the integrity of participants' accounts whilst also providing a rich detailed response to shed light on the research question (Ritchie & Lewis 2003).

A framework is useful in the analysis because it provides both an overview and a structure to the 'thick' data.

Thematic analysis

The conceptual framework was iteratively reviewed for potential themes that explained participants' behaviour. Initial themes were reworked until they 'fit' with participants' descriptions. Literature on consumer understanding and the effects of FoP health claims on food choice aided thematic analysis. Such a final stage of analysis builds on the framework process. Three themes were generated to explain participants understanding and the effects of natural implied health claims on food product evaluation and food choice.

4. Results

We know that shopping is characterised by a number of choices (Gabriel & Lang 1995). When it comes to evaluating food products consumers have to have ways to evaluate these choices. This study explores ten participants' understandings of a natural implied health claim and the effects of a natural implied health claim on their food product evaluation and food choice. Descriptive analysis of these ten participants interviews resulted in five descriptive categories that describe participants' understandings of implied health claims and their behaviour when they evaluated a natural implied health claim on a mock cereal product. The descriptive categories are: factors that influence food choice, natural claim interpretation, benefits, evidence required for a natural claim and behaviour. The descriptive analysis was followed by a conceptual analysis of Phase I and Phase II interviews of these ten participants, and resulted in six themes. These six concepts analyse different aspects of participants understandings of natural implied health claims, relevant to the research question, and cohere to form the conceptual framework (Ritchie & Lewis 2003). The concepts are: conflicting product choice, avoiding interpersonal conflict, information preferences, perceptions of FoP information, difficulties with manufacturers use of implied claims and managing FoP information. From the conceptual framework three themes emerged, risk, trust and scepticism, which will be explored in the next chapter.

4.1 Descriptive results

Category 1: Factors that influence food choice

When grocery shopping, most individuals had an idea of foods they required, and would shop accordingly with a virtual list in mind. Participants usually listed two or three cereals that they habitually purchased, with each individual in their households displaying a preference for a particular cereal choice. Some participants described price as important during product selection. Others described maintenance of health or a specific health condition as a contributing factor in product selection. In addition, several individuals assessed a product's healthiness by inspecting the nutrition information.

Category 2: Natural claim interpretation

Participants described natural foods as a primary food, arising from nature. Many individuals stated that additives should not be present in a natural food, and described additives as preservatives, enhancers, ‘artificial things’ and ‘chemicals.’ Others described natural foods as being less processed or having undergone only the ‘traditional’ method of processing. One woman described a natural food as containing less fat due to less processing. Some individuals voiced scepticism of foods with natural claims. The one male participant attributed his scepticism to the ubiquity of natural claims on the vast majority of products in the health food stores he frequented.

Participants listed a wide variety of natural foods. Broadly, this could be divided into three areas: products that were grown (e.g. honey instead of sugar), products they had observed with natural claims (e.g. bread and cereals) and products they believed could be produced without artificial ingredients (e.g. ice-cream).

Category 3: Benefits

Several participants assumed that natural foods were a better overall choice, and cited health benefits and a superior taste as advantages of a natural food. One individual was motivated to purchase natural products because they were better for the environment. Overall, participants considered the lack of additives in natural foods advantageous, and reported an avoidance of products containing additives.

Category 4: Evidence required for a natural claim

Several individuals reported that food manufacturers had an obligation to present accurate product claims. Other participants were sceptical of manufacturers requirement to use natural claims responsibly. Many reported that foods with natural claims should not contain additives, flavours, enhancers or preservatives. One participant noted that the evidence for a natural claim was dependent on one’s definition of natural. A few individuals reported that they would inspect the product information for an absence of additives, to confirm their expectations of a natural claim.

Category 5: Behaviour

When participants examined the mock cereal they either scanned the FoP quickly or spent longer examining the nutrition information on the BoP. Individuals described the fruit images and background colours as bright and attractive, however in contrast many described the FoP information as bland and that they would prefer more detailed product information on the FoP. Several participants stated the natural slogan would not affect their product evaluation, but others described the slogan as visually appealing, and one individual considered the ‘control’ cereal a generic brand. One participant reported she liked the natural claim because it signified the cereal was free of artificial ingredients and not overly processed. A few participants were sceptical of natural claims based on their experiences. One woman voiced scepticism of natural product claim when the ingredients did not conform to her expectation of a natural product.

Participants experienced difficulty using the NIP to interpret the macronutrients within the mock cereal with accuracy. During nutrition assessment, participants usually over-estimated the ‘negative’ nutrients as ‘high’ (e.g. sugar and sodium) and ‘positive’ nutrients (e.g. fibre) as ‘okay’, instead of good. In the ingredient list, individuals cited the fruit content, honey and fibre content as potential benefits. Throughout the discussion, participants’ food beliefs and preferences strongly affected product acceptability. Some disregarded the mock cereal because it did not match their expectations or contained ingredients they disliked. In addition, two participants queried the price of the natural cereal, as they considered this important in their product selection.

Some individuals believed the mock cereal’s wording and images misleadingly portrayed a healthy cereal. Others noted that the ‘truth’ may be dependent on the interpretation of the image and the claim, and that some natural products may be more natural than other products. Several participants voiced concern on the additives, which they stated they would avoid if possible. Most participants opted for the natural cereal, and cited greater appeal as their primary motivation, despite no observed difference in the ingredients or nutritional information.

4.2 Conceptual results

4.2.1. Conflicting product choices

Most individuals recounted several features that influenced their product choices, which included habit, price, taste, visual appeal, novelty and health. Participants' comments suggested that these features often resulted in a conflicting product choice. For example, healthy food choices were viewed as expensive and in conflict with selecting a well-priced food.

Participants managed this conflict by compromising on one or more features to facilitate a product choice that satisfied most of their needs. In different situations, different features were more salient. For example, Beth usually selects economically priced foods that she believes promote good health for herself and her husband. However, when she purchases food for hosting graduation events for student events, her product choice differs because price and health are less important and novelty a more important feature. She states,

I do functions for graduation and things... [and] I often look at things differently ... last time I think I brought Rice Crackers and I brought them because they were a new brand ... And they were more expensive... I didn't care about the 99% fat free...because I wasn't going to be eating them. [BB 17-18/18/#2]

For most participants the most important feature carried the most influence in product choice. For example, Kristin reported a conflict between her preference for healthy food and price however price is the dominant feature that determines her product choice. She stated:

For example with bread - I really like 'Vogel' bread but when it's not on special we go for something else and I'd go for the 'Burgen' bread or something a bit healthier...and just compare, I was looking at the 'Pam's, and they do specials, multi-grain, that are quite healthy. [KK 2/29]

For participants who reported themselves as highly motivated to purchase healthy food, taste was less important than the nutrition content in influencing food product choice. In contrast, Giselle, who was less motivated to purchase healthy food,

described taste as the dominant feature in product choice. The following comments by Giselle on the merits of natural butter:

Some [labels] say natural butter, which definitely means that they do not have much added to it. ... Or, even like spreads I - go for the butter rather than, like margarine, because, it's not exactly butter, I think. [GG 16/18]

Giselle justified her choice of natural butter because the natural claim suggests to her a compromise, a product that is both tasty and healthy.

...no, nothing really tastes like butter. Yeah I think taste is a major component and also...again the whole religious thing comes in. like people - tend [to go] for the natural pure stuff because they know where it comes from, very close to the source...[GG 16-17/18]

Similarly, when she felt like selecting a healthy muesli bar, she would look for a natural claim because it suggested to her a tasty product that was also healthy. For example, Giselle noted 'sometimes you feel like being fat and eating not so natural stuff, and sometimes you're like oh, I feel like being healthy, so you just go for the natural stuff' (GG 17/18). She added that she would, 'Definitely go for the natural one. Because it just locks in the flavour more...with muesli bars and stuff -, there are natural bars...that claim to be natural and they taste better' (GG 17/18).

4.2.2 Avoiding interpersonal conflict

Participants' comments suggested a need to manage conflicting choices. For example, several participants reported purchasing multiple cereals for their family because of conflicting preferences of taste or nutrition. The following quote illustrates this management of conflict:

I try and buy cereals that have low sugar content. So I stay away from things like 'Coco Pops' and 'Fruit Loops' and that type of thing. I don't buy them. Um, I tend to go for... my partner loves 'Nutri-grain'...which is probably full of sugar.

And I go for muesli products. And the children usually prefer muesli as well. [AA 2/23]

Another participant, Giselle, a young student, described managing conflicting choices in her shared flat, by purchasing one cereal that was agreed upon by everyone. She stated:

Cereals, everyone loves 'Fruit Loops'. - When it comes to muesli - there so many [choices]...everyone likes a certain flavour. I am an almond person, whereas there are kiwi fruit and feijoa ones...So as a flat we stick to 'Weet-bix'. If you want something else, you go buy it yourself. Pretty much. So there's like this huge 'Weet-bix' box and we just keep it and that's like free to everyone in the flat...[Any] thing else you buy, you write your name on it, and chuck it in the cupboard pretty much. [GG 2/18]

Yeah, it's always on the list [tip top bread] - whether its on sale or not we just grab that...Yeah, because we do it as a flat, so what everyone agrees on...because it comes out of the flat account so I don't want to cause any conflict. [GG 1-2/28]

Caroline described one of her strategies for managing her tendency to nibble on muesli all the time by never purchasing muesli for herself and only purchasing muesli for visiting house guests in small quantities (CC 2/25).

The comments illustrated above suggest the various ways that participants managed interpersonal conflict. Avoidance of conflict was also observed in other aspects of participant food choices. Several participants described their avoidance of unknown foods or ingredients or when the potential risk could not be easily quantified. For Faith, natural ingredients represented a safer choice.

Interviewer... Why is eating something natural a healthier product for you?

FF Well, hopefully it hasn't been treated with anything. And, the ingredients such as the fruit that's been added have been organically grown perhaps. I don't

know. I mean that would be the way my mind...would process the information.
[FF 5/16]

Dianne described natural foods as representing a better choice because they represent less risk to the environment and are thus a safer choice. She stated, 'I would think they [natural substances] would be less dangerous, umm, they possibly less abrasive on, so kinder to, the things you're using them on, and better for you... and maybe even better for the world' (DD 15/24).

In contrast to natural ingredients, artificial ingredients were considered an unknown quantity that carried potential harm. Participants described a preference to avoid the potential risk of these unknown artificial ingredients. None of the participants mentioned any specific additives that were harmful, and instead individuals used non-specific terms such as 'chemicals' to describe these ingredients. Elisabeth and James felt that it was easier to avoid all additives than any specific additives. They stated:

It's got preservative and emulsifier in it as well. I look at these a lot of the time and I think, well what are they? And I don't really have an understanding. - I see them on a lot of things...so I try to go as natural as I can. So again, that would influence what I was going to buy. [EE 7/22]

I mean I generally try to avoid things with preservatives so... I mean I don't really know if one type of preservative is better than another type of preservative...[JJ 6/42]

Hazel and Elisabeth viewed natural claims as beneficial because they suggested a product free of additives. The following quotes illustrate this point:

I would expect the ingredients to [have], nothing added to them, the ingredients to be - recognizable. There is not a whole list of codes [in a natural food]...you can recognize all the ingredients in them. [HH 11/17]

It just takes it away from the additives and chemicals or whatever that would appear in foods that I'm not interested in...So where possible I would go for a natural product. [EE 15/24]

Interestingly, only one participant James noted any potential harm caused by natural substances or objects, and noted that natural does not necessarily suggest a safe or healthy product. He stated,

I'm a little unsure as to where you draw the line as to natural equalling good or healthy or something like this because you could say cocaine is natural right? [JJ 37/42]

James' comments suggested that he was highly motivated in selecting healthy foods and that he had spent time reflecting on the meaning of natural claims, based on his experiences.

Overall, participants' comments suggest that natural claims are attractive because they provide valuable information to enable product choice. Specifically a natural claim assisted participants with management of the multiple factors that influenced their food choices, and, more commonly recounted, in the avoidance of potentially harmful ingredients.

4.2.3 Information preferences

Some participants reported a preference for FoP product evaluation and noted several features that made FoP evaluation attractive. This included aesthetic preferences, a more rapid food product evaluation and food choice, ease of use, and guidance in BoP nutrition information inspection.

When participants evaluated the mock cereals they scanned the FoP first, and reported very strong opinions on the appeal of the colourful images and background colours when they examined the mock cereal. For example, Anne had a strong negative reaction to the muesli images, which influenced her opinion of the mock cereal. She stated, 'Yes, I'd probably look at that [muesli image] and think it's toasted.

I do not want to know it' (AA 3/23). She found it difficult to attribute any benefits to the cereal, because she had a strong aversion to the image of toasted muesli. Comments such as the one illustrated suggest that participants' mock cereal evaluation were strongly influenced by the visual content.

When participants were asked to choose between the control and natural mock cereal, most participants opted for the natural cereal, whilst acknowledging no difference in content between cereals. During the mock cereal choice, several participants opted for the natural cereal because the FoP was more visually appealing. For example, Hazel noted that both mock cereals were identical in content but preferred the natural cereal because it displayed more FoP information. She stated, 'I'm not sure what it is but it just looks slightly more appealing and I think just the fact that it [contains that] little bit [of] extra writing on the front' (HH 6/17). Similarly, Faith noted, 'So even though they look the same, with the extra information on it - I think it's more "retail-able" [laughs]' (FF 4/16). Their comments suggest that more information on the FoP is in itself a valued trait for them and that natural claims appealed at an aesthetic level to these participants. This visual appeal may be associated with the positive imagery participants used to describe natural claims for e.g. 'dug up out of the ground' (DD 14/24), how 'nature intended it to be' (BB 22/25) and as 'it was picked' (HH 11/17).

Giselle considered the plainer packaging of 'Budget' food products 'boring', because they don't feature any claims, in comparison to a product like 'Tim Tams' that display lots of extra information, which makes the product more appealing. Giselle noted that these products are probably similar in content, but that she never bothers 'comparing or reading the back' of pack nutrition information (GG 11/16/#2).

In addition to the FoP visual content, some participants preferred evaluating and selecting a food product based on the FoP textual information because it resulted in a more rapid product assessment in supermarket environments that displayed a myriad of choices. For example, Anne stated that she preferred a short supermarket trip and to achieve this she scans packages quickly and does not look at the nutrition information (AA 3/23). Similarly, Hazel reported her mock cereal choice was based on which product she thought she would grab first in a supermarket and felt the natural claim made it 'stand out' (HH 5-6/17). Likewise, Dianne thought the control

cereal FoP needed more information to attract a consumer who rapidly scanned the FoP claims. She stated:

I think it needs more words to be informative...because some people don't get past the front...Perhaps, something that talks about what delicious components [smiles, laughs]... and sometimes they talk about flavour as well. Delicious berry flavour, fruits from the forest, things like that. [DD 4/24]

Others participants described a preference for FoP claims because they perceived more claims to represent a better quality product. For example, Hazel noted that more expensive food products usually feature more FoP claims. She noted that the control cereal, in contrast to the natural cereal, provides 'less information [and] it looks sort of more supermarket brand type...you know generic sort' (HH 9/15).

Many participants preferred more FoP information because the claims communicated product benefits that assisted in their product assessment. For example, Caroline was accustomed to manufactured food products that displayed multiple FoP product claims and considered this format to speed up her product assessment. She commented:

I mean it just says 'Berry Muesli.' It does not - promote itself, [for example] 'good for your health' or... 'high [in] fibre' ... 'low in fat' or anything else. It's just got that [Berry Muesli] in the front so you'd have to turn it over to read - the nutritional panel to read what else it had [or] what benefits it was going to provide above other ones. [CC 5/25]

Similarly, Giselle liked the PDI information on the Ryvita crackers because the PDI interpretive element was easier and faster to interpret than the NIP. The PDI enabled her to inspect the crackers in a 'lazy' fashion, as opposed to a product without an interpretive element that would require her to inspect the BoP nutrition information (GG 5-6/16/#2).

The FoP information was also useful in narrowing down participants' product information search. For example, James noted he would scan peanut butter for FoP

organic claims and then inspect the nutrition information of products that displayed organic claims. He did not trust the FoP organic claims but would use the claims to guide him to more trustworthy nutrition information on the BoP. He stated:

[If a product is] organic I would generally expect it to not have hydrogenated oils and other stuff in it. - So I look at the label and I see that it only has peanuts and salt and so my expectation was confirmed...even if it said natural peanut butter, I would not take it without having a look [JJ 37-38/42].

Similarly, Beth found FoP information assisted in narrowing down her product search, and would scan FoP labels for ‘low sodium’ claims, and then examine the BoPs of these selected products (BB 10/18 #2). In addition, Hazel noted she used FoP claims to provide more information on the product ingredients, and would scan yoghurt labels for ‘traditional’ to indicate yoghurt made with less milk solids (HH 7-8/14/#2).

In addition to guiding the information search, some participants found FoP claims attractive because it helped trigger their memory for associated product benefits that were important in their product choice. For example, when Giselle examined the food product with the explicit claim 97% fat free, she associated this with a product that was also lower in energy, and found this association useful in guiding her product search (GG 7-8/16/#2). In addition, Hazel associated a product with a wholesome claim to potentially contain less sugar. She found the claim associations useful but again noted that she would confirm this association before she selected the product (HH 7/14/#2).

Most participants’ preferred to evaluate the nutrition content of food products based on two or three nutrients that were of personal value. Only highly motivated individuals’ nutrition evaluations were holistic and considered all nutrients.

Several participants reported they were uncertain of reference amounts of specific nutrients listed in the NIP, and preferred to evaluate a new food products’ nutrition information in comparison to a trusted brand. For example, Dianne reported that she

assumed that the mock cereal would contain benefits, but that she did not know how this compared to the benefits of other cereals (DD 3/24).

Most participants' nutrition evaluations tended to focus on nutrients that posed a health risk that they wished to limit, such as, reduced amounts of fat, sodium and sugar. For example, Kristin preferred to evaluate the healthiness of a product by selecting a product with the least amount of unwanted nutrients. She stated,

K ...[I] usually look at the ingredients as well... Like how many calories and carbohydrates in a package .I would look at the carbohydrate and fat content.

Interviewer... Any sort of numbers that you have in mind when you are looking at carbohydrates or fat?

K Not really it depends on the product, I just take the one with the least.
[KK 1-2/29]

Some participants such as Hazel were attracted to natural claims because they suggested an absence of potentially harmful additives.

Interviewer What would you expect the ingredients [of a natural food] to be?

HH I would expect the ingredients to [have], nothing added to them, the ingredients to be – recognizable. ... There is not a whole list of codes. That you can recognize all the ingredients in them...and I would assume that it - was better for me [HH 11/17]

Overall, when evaluating a food product, participants' comments suggest that natural claims are attractive because of a preference for FoP product assessment, to aid rapid product selection or to guide evaluation of the BoP nutrition information. Natural claims may also be useful in participants' product evaluation because the suggested meaning (i.e. an absence of potentially harmful additives) is consistent with their approach of evaluating food products based on nutrients they wish to avoid.

4.2.4 Perceptions of FoP information

Despite participants' account of their preferences for FoP information to aid product evaluation and food choice, they also noted concerns on the truthfulness of the FoP information and an awareness of common marketing strategies. For example, Beth, aware of the discrepancy between the mock cereal image of fresh berries and the actual dried berries in the muesli, stated with certainty, 'So I presume it's dried berries. It looks - they are not dried there of course (gestures to pictures of fresh berries, laughs)... but, it is appealing, the colour's good' (BB 4/25). She considered the images appealing but was aware that the information was misleading.

Similarly, whilst participants' described FoP claims as attractive and useful in conveying product information, they also noted the claims to be a form of marketing that may represent a biased view of the food product. Caroline noted,

Well it is useful [product claims], but sometimes you've got to look at the nutritional panel anyway to see if they're ...telling the truth or not (laughs)...Because 'lite'- might mean the weight of it's light, it doesn't necessarily mean...I don't know...Oh but you know, there's different interpretations of things...[CC 5/25]

Additionally, Hazel was 'distrustful' of FoP claims, as a result of her past experiences with reading product labels, and usually examined claims critically. She stated, 'sometimes you get surprised by a claim but most of the time [I consider] – what are they not telling you [about the product]? (HH 12/14/#2)

Negative experiences with marketing in other arenas' may have influenced some participants' perception of food marketing. For instance, Beth recounted an example of dishonest marketing in a letter that her local energy provider had sent to her; the letter advertised two types of renewal contracts, three years or five years in duration. The longer contract was worded in such a way that could easily be misinterpreted to suggest a shorter duration if someone 'read it quickly or they do not take time to think.' Beth felt that this type of dishonest advertisement was the 'catch in marketing' and she noted the experience left her feeling 'so mad' (BB 11/18/#2). Her negative

experiences with marketing may have influenced her views on food manufacturers, as she described the FoP claims as ‘marketing swizz’ (BB 7/18/#2).

Inconsistencies in product content and product claims led some participants to report scepticism on the credibility of FoP information. For example, James considered the mango image on the mock cereal he viewed misleading, as there was no mango content listed in the cereal ingredients. He thought that this might be a serving suggestion that manufacturers typically display with what he termed ‘some bowl of crap’ to display a healthy breakfast (JJ 8/42). Similarly, Elisabeth thought that food manufacturers could ‘get away with quite a bit (laughs)’ and misuse a natural claim. She thought that some manufacturers may choose to use a natural claim for a ‘tiny, tiny ingredient...that relates to a tiny piece of banana or something... and yet it’s surrounded by all this sugar and things’ (EE 16/22). Comments such as those illustrated above may account for participants’ description of explicit and implied claims as being similar because both types of claims represent product claims that manufacturers use to market their foods.

When participants evaluated explicit and implied claims on similar food products, they evaluated the claims similarly. For example, when Hazel examined the explicit and implied claim on two similar cracker biscuits available in New Zealand supermarkets, she noted that both types of claims suggested a product higher in fibre. She attributed this association to the implied graphics depicted on both food products suggestive of fibre (wheat stalks and poppy seeds) (HH 3-4/14/#2). Like Hazel, when Beth evaluated implied and explicit claims on paired food products, she noted that both types of claims had a similar ‘usage’ to her, and are part of the same step in her process of food evaluation. For products that contained either an explicit or an implied claim, Beth preferred to examine the nutrition information to judge the veracity of the claim because she was sceptical of all FoP information (BB 6-7/18/#2).

When participants examined FoP claims on food products produced by familiar food manufacturers, their perceptions on the food manufacturer appeared to influence the credibility of the FoP claims. For example, when Beth examined the Arnott’s rice crackers, she described the manufacturer as a ‘good English brand’, and as a result was more willing to trust the FoP claims and ‘give it a go’ (BB 16-17/18/#2).

However, participants reported an erosion of trust in a manufacturer when they found discrepancies in product information and the food product, because it cast doubt on the integrity of the food manufacturer. When Beth realised the Arnott's rice cracker was made in Indonesia she was less likely to trust the product claims because she associated 'made in Indonesia' with poor manufacturing practices in China and stated, 'I'm very loathed by food made in China' (BB 15/18/#2).

Overall, participants were cautious when evaluating FoP information because they were aware the information was a form of marketing, and described several ways the FoP may be misleading. Negative experiences with marketing of food products and products in general, were associated with participant scepticism of FoP information. Scepticism may account for participants' behaviour to evaluate all FoP information, including explicit and implied health claims, similarly and in context of the overall product.

4.2.5 Problems associated with manufacturers' use of implied health claims

There is controversy surrounding manufacturers' potential misuse of implied claims (Fisher and Carvajal 2008). Therefore, this study also explored why the process of interpreting natural implied claims may be problematic for some participants.

Participants experienced difficulty defining a natural implied claim. Their comments suggest this difficulty may be associated with the ambiguity and the interpretive nature of natural claims. For example, Caroline stated:

*Could be the same. I guess it is saying that all, what do they mean by natural?
Natural umm...I suppose you think they haven't been modified in any way so
perhaps its got pure honey but I suppose...I mean, grains are natural. [CC
6/25]*

Beth contemplated how the definition of natural may vary amongst individuals, and stated, 'but then...how natural is natural to some people?' (BB 10/25) Difficulties in interpretation may prolong product assessment, and participants had earlier stated a

preference for rapid food selection. This definition appeared to differ depending on participants' beliefs and experiences with natural claims. For example, James had noticed natural claims on the most products in the stores he frequented, and believed that many natural things may be harmful. Therefore, he did not consider a natural claim suggested a healthy food (JJ 37-41/42). These beliefs led James to evaluate the natural claim on the mock cereal differently than individuals who felt a natural claim suggested it was good for them.

Overall, participants comments suggested that the evidence required for a natural claim was dependent on an individuals' or a food manufacturers' relative definition of natural (BB 22/25). Such ambiguity led some participants to question manufacturers and their potential misuse of natural implied claims. For example, Elisabeth stated, '... I'd say that [with] wholesome [claims] they can get away [with] a hell of a lot more...maybe even natural [claims] to a degree as well...cause it's more of a descriptive word...(EE 21/22). This ambiguous definition has the potential to create further confusion. For example, Faith noted that she would confirm a natural product by examining the product for 'real' ingredients (FF 7-8/16). 'Real' is a term similar to natural in that is descriptive and potentially open to interpretation.

4.2.6 Managing FoP information

Scepticism of product claims affected participants differently. Those participants who reported themselves as highly motivated to choose healthy foods confirmed their expectations of the natural implied claim by examining the nutritional information. For example, Elisabeth described how she always inspected products:

I would not simply base it on the word. - No, I don't tend to do that. And the reason I don't tend to do that is basically knowing - the health benefits of certain types of foods. So I would be looking for, the things that are saying to me, these are natural and you know. ... So I'm probably quite - an aware consumer at the end of the day. [EE 16-17/22]

Participants who confirmed FoP information using the BoP nutrition information reported a similar method of confirmation for both implied and explicit claims. For

example, Hazel noted that ‘the baseline [for manufacturers] is that they are trying to sell you the product, so...it’s still marketing.’ Instead, Hazel chose to confirm any FoP claims by reading the ingredient list and the nutrition panel, and stated, ‘that’s the only claim that I believe’, [because] ‘have to be [true] by law’ (HH 13/14/# 2).

In contrast, less motivated individuals trusted the natural implied health claim despite their scepticism. For example, Giselle had earlier described scepticism of natural claims, but later noted that she would opt for the product with the natural claim because it was a healthier choice (GG 17/18). Interestingly participants’ scepticism on natural claims did not prevent most participants from choosing the natural mock cereal.

When participants had to select a food product under time pressure, they noted that they reverted to selecting ‘safe’ foods that they trusted. For example, Hazel noted that she would purchase something that she had purchased previously or a whole food product that did not require her to examine the nutrition content (HH 12-13/14/#2).

Some participants considered a statement that clarified what the manufacturer meant by their natural implied claim could aid understanding of the natural claim. For example, Beth noted that a descriptor such as, ‘based on natural ingredients’ could facilitate understanding when examining a natural product (BB 23/25). Similarly, Faith felt manufacturers could include a statement explaining the benefits gained from a natural product and that it did not contain additives (FF 6/16). Like Faith, Giselle expected manufacturers to include an explicit statement of no preservatives before they made a natural claim (GG 17/18).

Overall, participants’ comments suggested that they evaluated all FoP claims similarly. They noted that natural implied health claims were sometimes problematic to evaluate because the ambiguity of a natural claim meant that manufacturers could use the claim to suggest different things. Potential negative effects of this included scepticism of manufacturers that featured products with misleading natural implied health claims. Moreover, the ambiguity of a natural claim necessitated a confirmation using the ingredient list, which prolonged the product inspection.

5. Discussion

Framework

A previous qualitative study evaluated Australian and New Zealand consumers concerns about food. The researchers theorised that consumers' concerns may change over time, but the underlying reasons for their concern are more enduring, and that these concerns could be reduced to a small number of overarching themes (Worsley & Scott 2000). A 2005 qualitative study by FSANZ provided useful insights on how consumers interpreted FoP claims (FSANZ 2005b). However, the analysis was largely descriptive, and did not attempt to explain participants' behaviour. The present qualitative study aimed to explore participants' understandings and the effects of natural implied claims on food choice, and to generate themes that may explain their behaviour. Grounded analysis used to analyse the data set resulted in three themes: trust, scepticism and risk. The analysis also provides useful insights into how these ten participants perceive nutrition information on food labels.

The next section elaborates on the emergent themes of trust, scepticism and risk. This is followed by a discussion on the study's findings in context of relevant literature on each theme. A further section describes the implications of these findings. Lastly, this chapter concludes by detailing the strengths and limitations of the present study.

5.1 Elaboration of analytical themes

5.1.1 Risk

Participants' comments suggested that their food choices were dictated by an avoidance of 'bad' choices (Mythen 2007).

Participants noted that when selecting foods for the household unit that they would frequently purchase several variants of breakfast cereal to please all household members and avoid a disagreement. In Giselle's student flat, their flat budget prohibited the purchase of several varieties of cereal and flat members had an arrangement to only purchase one cereal that everyone liked to prevent any conflict

within the house . Individual flat mates purchased any additional cereals that they favoured separately and clearly labelled these with their name in the food pantry (GG 2/18). As well as choices that prevented external conflict, food choice was also described to prevent internal conflict; for example, Caroline avoided purchasing muesli because she had a tendency to nibble on it all the time (CC 2/25). She saw this as putting herself at risk of snacking.

In product evaluation, several participants recounted a ‘negative logic’ (Levenstein 1993) of ‘bad’ nutrients they wished to avoid in a healthy food. Overall, participants’ comments suggested they preferred to avoid ‘bad’ nutrients, while only a few comments suggested a safe intake of ‘bad’ nutrients. For example, Kristin noted that her choice of bread was influenced by the nutritional content, and she preferred a bread that contained the least carbohydrate and fat (KK 2/29). Her comments on carbohydrate avoidance also suggest an influence from media on the perils of consuming high carbohydrate foods. Similarly, when Beth examined the 97% fat-free rice crackers she associated the absence of fat with a product that was ‘good for you’. When asked to explain this association, she stated, ‘because we don't need to be eating lots of fat in our diet, our diet should be limited’ (BB 8/18/#2). There are established health benefits associated with a moderated intake of nutrients such as fat and sodium, but participants’ comments suggest an overreliance on ‘negative nutrition’ (Levenstein 1993) to inform their product evaluation and food choices and avoid risk.

Participants’ value for natural implied health claims is consistent with a negative logic, because such claims suggest an absence of potentially ‘harmful’ artificial ingredients. Artificial ingredients were avoided because they represented a risk that could not be easily measured. For example, Hazel mentioned that she avoided additives because she could not be sure they are harmful, and preferred not to take this risk if there were other available options (HH field notes). Overall, participants’ descriptions of a product free of additives as a healthier food product was consistent with their earlier comments that suggest participants used a negative logic to determine the healthiness of a food product.

Several participants noted that artificial ingredients have the potential to be harmful. However, only one participant, Beth, described a prior experience with additives that

resulted in adverse health effects. Her husband had suffered in the past from migraines when he consumed foods that contained artificial colours (BB 5/18/#2). As a result, Beth inspected food labels for the presence of artificial additives, and was wary of purchasing foods with any artificial ingredients.

Overall, participants' comments suggested that artificial additives are an unnecessary risk and displayed a preference for more natural options when given a choice.

5.1.2 Trust

Participants' comments suggested that their conceptual concerns hinged on trust they felt in the information. Individuals described foods that they habitually purchased in terms of their trust in the product content and in the food manufacturer.

Participants described their trust in food content to be rooted in prior experience, the advice of peers, and the media. For example, Giselle noted that she never purchased lower cost brands because of general beliefs from peers that they were lower quality (GG 15/16/#2).

When selecting new products some participants noted a tendency to compare the new nutritional information to a trusted brand. For example, when Hazel selected a new cereal, she often compared it to a cereal she was familiar with and trusted. She stated, 'I know the Hubbards range - usually [consist of a] fairly good sugar range, so I usually use that as a comparison if I'm not actually buying them' (HH 2/17).

Participants stated they were wary of overly processed foods, and their statements suggested they were more likely to trust food products manufactured using the 'traditional' method. Some participants associated natural claims with 'old-fashioned' foods or foods that had undergone less processing. For example, Hazel examined yoghurts for natural implied health claims to search for products produced using the traditional method (HH 4/17).

Participants' trust in specific food manufacturers was associated with a habitual purchase of the same products. When they discovered inconsistencies in the product

content and product claims this affected some participants' brand loyalty. For example, Hazel was shocked that a cereal she regularly purchased, a Hubbards muesli-based cereal, which displayed implied FoP claims that suggested a healthy product, contained a very high sodium content. She noted that she embarrassed her husband in the supermarket by yelling at the product, because it contained a 'horrendous' amount of sodium, and nearly six times the sodium content as a rival Pam's cereal. The discovery eroded her trust in the Hubbards muesli, and resulted in a change of brand loyalty and habitual purchase of a Pam's muesli - based cereal. (HH 11-12/14#2)

5.1.3 Scepticism

Participants noted that inconsistencies in product content and product claims affected their ability to trust the information, and led some participants to view FoP information sceptically. In general, participants described a preference for FoP claims to aid product evaluation and food choice, but were also aware that the information was a form of marketing. They evaluated claims with caution, and in context of other personally relevant product information. For example, when Giselle examined the natural mock cereal, she was sceptical of the claim, because she believed it was common to add artificial colours and sweeteners to mass produced foods, and thought the package did not look expensive enough to be all natural (GG 5/18).

Negative experiences with FoP claims resulted in highly motivated participants confirming their beliefs of new food products by examining the BoP ingredient list and NIP. For example, Elisabeth, who considered herself an aware consumer, usually inspected the nutritional content of a natural product to confirm it matched her expectations, instead of relying on the FoP information (EE 15/22).

A few participants noticed the ubiquity of natural claims on manufactured food products. This resulted in one participant, James, discounting most natural claims because he had seen them on 'everything' (JJ 41/42).

5.2 In context of other literature

5.2.1 Risk

Risk society hypothesis

Sociologists engaged in Beck's risk society hypothesis contend that individuals are increasingly aware of hazards in our environment. They argue that large-scale changes over the last three decades such as rapid technology shifts and economic uncertainty have affected individuals and influenced them to engage in risk management. Over the last decade, risk has become a ubiquitous topic in print and digital media forums, in areas ranging from national security to healthcare (Mythen 2007).

Despite opponents of 'risk society' who argue the hypothesis is 'empirically light', the theory does provide insight on overarching social phenomena, for example the rise in social consciousness of environmental risks at the individual level. Media coverage of food panics, manufacturers' failure to protect consumers and the 'medicalisation' of foods highlights to consumers the notion of risk inherent to food choices (Green *et al.* 2003; Mythen 2007).

A bombardment of potential risks has resulted in a loss of trust in traditional agents to contain risks, and has redirected risk management to the consumer. This resulting loss of trust has also stimulated a shift in consumers' decision making practices from an acquisition of good to a 'negative logic' of risk avoidance (Levenstein 1993; Mythen 2007).

Food choice as a contemporary risk

Food choice is a contemporary risk for several reasons. Ingredients that were once considered harmless such as fertilisers have been discovered to contain toxins. Food risks are frequently silent and invisible to the naked eye (e.g. food spoilage or food poisoning), which require the formation of regulatory agencies that monitor our food supply and conduct scientific analysis to assure consumers of its safety. Progression in science has created further avenues of potential risk e.g. genetic-modification and is questioned by some individuals as being un-natural and a potential risk to public food supply. Food has become 'medicalised' in its association with health, illness and disease (Lupton 2005). Individuals cannot completely avoid food risks. Instead,

consumers are informed on how to manage these daily risks, within a context of uncertainty and conflicting expert advice (Green *et al.* 2003).

Rise in obesity

In the field of obesity research, sociologists contend that shifts in obesity rates are facts about society or a social fact, and therefore that changes in obesity rates reflect social changes. They argue that variables at the individual level such as energy expenditure, cannot completely explain the changes in obesity rates as long as the energy content in foods is a societal responsibility. Instead, they believe that the rise in obesity can only be explained by changes in higher level variables. Moreover, they maintain that lifestyle changes that result from affluence, technology and speed are interconnected and a response to the changing way we live our lives. Attempts to solve the social fact of obesity by disseminating the problem into discrete variables such as individual food choices, fails because they are interconnected (Crossley 2004). Therefore, individual food choices must be interpreted within the context of societal risks and problems.

Negative nutrition

Policy makers and food manufacturers have a tendency to report more on the reduction of nutrients in the management of health concerns. This emphasis on risk may have influenced ‘negative’ nutrients to be more diagnostic in food choice than ‘positive’ nutrients (Garretson & Burton 2000).

In line with a negative logic, most participants in this study examined the NIP and ingredient list for nutrients they wished to avoid. Participants referenced the healthiness of a food product by an absence of ‘negative’ nutrients. This finding is consistent with a European review of consumer understanding of food; the researchers found that consumers reported using labels to assess the content of nutrients they wished to minimise, and inspected labels for fat, calories and sugar (Cowburn & Stockley 2005). More locally, a FSANZ report on consumer understanding of food labels suggested that consumers found product evaluation difficult, and their product assessments tended to be dominated by fat content, even when the difference in fat content between products was minimal. The researchers concluded that an overly stringent focus on fat content may lead consumers to overlook differences in more important nutrients (FSANZ 2003).

In the present study, several participants preferred an absence of ‘negative’ nutrients, including fat, sugar and sodium. This expressed avoidance may be associated with participants’ accounts of a lack of confidence on reference amounts of macronutrients, despite most study participants being tertiary educated and highly motivated to purchase healthy foods. In situations where comparative nutrition information is not available (such as a trusted brand or a FoP PDI), it may be easier for participants to avoid the ‘bad’ nutrient all together. Alternatively, participants may have preferred food products with zero ‘negative’ nutrients because it was simpler to process than analysing the NIP values and may result in a more rapid product evaluation and food product choice. Most participants displayed a preference for natural implied health claims as such claims suggested an absence of artificial ingredients. It is argued here that participants displayed a preference for natural claims partly because it was consistent with their preferred approach of applying a ‘negative’ logic to food product assessment.

Changing lifestyles

‘Late moderns increasingly eat out, drink out and take away’ (Crossley 2004 p 238). Shifts in how individuals in a society eat reflect wider changes in spatio-temporal patterns. Simply stated, individuals are busier and have less time to think about preparing food. The notion of a rapid food choice and consumption of food appeals to consumers because it resonates and ‘works’ with their lifestyle (Gabriel & Lang 1995; Crossley 2004). A rapid choice is illustrated by Anne’s comments on product evaluation, ‘I’m not studying it [product labels] when I’m scanning down the supermarket. I’m scanning, and I want to get in and get out’ (AA 8/23).

Superficial cognitive processing of nutrition information

Despite reports by consumers that they desire nutrition information on food products (Scott & Worsley 1997), actual use of food label information appears to be very low (Higginson *et al.* 2002a; Higginson *et al.* 2002b).

Research on consumer understanding of food labels suggests that consumers have a preference for, and are able to process simple product information (Williams 2005). This finding is consistent with information processing theory (Petty & Briñol 2008)

that suggests that in times of high constraint such as a supermarket setting, individuals will have difficulty processing more complex information and revert to the use of superficial cognitive processing and simple heuristics (Grunert & Wills 2007). In a New Zealand study, participants had difficulty comparing products to assess product healthiness, particularly when this task required comparing more than one nutrient (FSANZ 2003). In the present study, participants preferred a natural implied health claim because the claim communicated product benefits. In light of the current evidence, it may be participants are accustomed to a superficial processing of nutrition information, and a tool that reduces the need to engage in an in-depth processing of information ‘fits’ with their busier lifestyle.

Concern with food safety

The majority of this study’s participants voiced concerns about the safety of artificial additives. This finding is consistent with previous studies on consumers’ attitudes towards additives. A European qualitative study evaluated how consumers chose safe foods. Within focus groups, individuals rarely spoke about safety as a primary reason to justify food choice. Instead, safety was bundled up with other features (e.g. convenience, price) that determined food choice. The researchers theorised that some participants used safety to justify less legitimate concerns, because safety is more socially legitimate. For example, one participant described the ‘safety’ of foreign food as a deterrent to consuming ‘ethnic’ take-away, which may be a more socially legitimate reason than an aversion to ‘foreign’ foods (Green *et al.* 2003). Similarly, in this study, ‘safety’ may be a discourse that participants used to justify an irrational avoidance of additives.

Additives permissible in foods are rigorously tested for safety before their entry into the food supply. However, highly publicised global food panics over the last three decades, such as panic over bovine spongiform encephalopathy in cattle, may have reduced consumers’ confidence in regulators to protect consumers, and highlighted to consumers the potential risks of manufactured foods (Lupton 2005).

Participants’ concerns on the adverse effects of additives are consistent with an earlier New Zealand report that found individuals were ‘very concerned’ about the risks of food additives (Scott & Worsley 2000). In another study in which participants voiced

concerns on food, two of their top concerns were about the chemical risks related to food safety – artificial sweeteners and preservatives in food (MacGregor *et al.* 1999). In the present study, most participants viewed additives negatively and despite not being able to describe specific effects they preferred to avoid this potential risk. Elisabeth's comments on artificial ingredients illustrate this point. She states,

...it's got preservative and emulsifier in it as well. I look at these a lot of the time and I think, well what are they? And I don't really have an understanding [of them], and I see them on a lot of things obviously -...so I try to go as natural as I can. [EE 7/2])

In this study, the majority of participants considered natural foods healthier, which appeared to be associated with an absence of artificial ingredients. This finding is consistent with a recent study in which consumers associated the health of natural foods with an absence of chemicals (Dickson-Spillmann *et al.* 2011).

5.2.2 Trust

Some participants described trust as a mediator of safety. Faced with making decisions on trust, they appeared to rely on strategies such as 'binary oppositions' to promote confidence in food choice (Green *et al.* 2003). Participants' comments suggest that in addition to the binary opposition of good/bad foods, they also employed the use of a natural/artificial duality, natural being associated with safety and artificial with a hazard or risk.

Another mediator of trust in product claims was trust in the food manufacturer; participants were more likely to 'risk' trusting a claim if they trusted the manufacturer. Failures of food manufacturers to uphold product claims have been proven to have disastrous affects on consumer trust. For example, consumer trust in the manufacturers of the 'Ribena' drink was severely affected by a misleading product claim. The product, heavily marketed on the basis of its high vitamin C content, was found to contain minimal vitamin C (Jaques 2008). Similarly, consumers in this study expressed dismay when FoP claims were not consistent with their expectations, and manufacturers did not uphold their side of the 'relationship'.

5.2.3 Scepticism

Earlier studies suggest mixed findings on the diagnostic value of FoP claims on product evaluation and food choice (Ford *et al.*, 1997; Mitra *et al.*, 1999, FSANZ 2005). In the present study, inconsistencies in product claims and product content led some participants to view claims sceptically. A study by Levy *et al.* (1995) suggested that consumers believe that claims are a form of marketing not a health promotion tactic, and view the NFP as a more trustworthy source of information. As a consequence of this reported lack of trust of FoP information, Garreston and Burton (2000) proposed that the BoP nutrition information is more diagnostic in product evaluation and food choice than FoP health claims. However, this hypothesis presumes that the average consumer has the knowledge and time to interpret the nutrition information. Research on information processing by Cacioppo *et al.* (1986) suggest that in times of high conflict, information processing is likely to be low, and individuals are more likely to engage in superficial processing and rely on heuristics to guide choices. In food product evaluation and food choice in a supermarket, it is likely that consumers' ability to process information is reduced in favour of a reliance on simple information. This study's findings appear to support this theory as participants were sceptical of FoP claims but also valued the natural implied health claim and displayed a preference for more FoP information to guide their product choices.

An Australian study that measured consumer beliefs and attitudes towards claims about fat content, found that consumers were sceptical of all nutrient content claims, and many participants viewed them as potentially misleading but that they influence their product evaluation (Chan *et al.* 2005). Similarly, in the present study, participants were sceptical of natural implied claims but also felt that the implied claims were beneficial to their product evaluation. Overall, participants stated a preference for more FoP claims, irrespective of the type of claim. Participants who usually inspected the BoP nutrition information used the FoP claim to guide their BoP information search. In contrast, individuals who restricted their information search to the FoP were more likely to place their faith in the food manufacturer to uphold the product claims. For both sets of participants their comments suggested the natural implied health claim reduced cognitive effort and was attractive, despite strongly voiced scepticism on the credibility of the claim.

Earlier quantitative research on consumer understanding and the effects of implied and explicit health claims on food choice suggest that both types of claims may have similar effects (FSANZ 2005a). In this study, participants were not probed on their reasons for a similar usage of explicit and implied health claims. In the present study, we found a similar response where participants who viewed both explicit and implied claims on similar products noted that both claims types had a similar utility. When queried participants attributed this similarity in utility to two factors. The first related to the belief that both types of claims communicated product benefits, and so would be inspected to evaluate the product's value. The second factor was their reported scepticism of FoP information. Despite some acknowledgement that explicit health claims may be more credible, participants felt that both claim types were marketing tactics and potentially misleading, which required confirmation from a more credible source of product information such as the NIP.

5.3 Overall implications

These ten participants' food product evaluation and food choice suggests a concern with avoiding specific nutrients rather a focus on the overall nutrition content. Participants valued natural implied health claims; this value is consistent with a negative logic that some participants used to assess food product ingredients, as natural implied health claims suggested an absence of potentially harmful artificial ingredients.

A surprising finding is that participants expressed dichotomous behaviours; they used natural implied health claims to manage the perceived risk of additives whilst concurrently voicing scepticism of natural implied health claims. They were willing to suspend their scepticism and trusted the FoP natural implied claim because the natural claim provided reassurance on the safety of the food product.

This study has helped to show that these ten participants value implied health claims and use them in a similar manner as explicit health claims in food shopping. Their shopping decisions are based on managing conflicting choices and a desire to find a trustworthy product that they perceive as safe.

5.4 Strengths and limitations

5.4.1 Strengths

This study is the first New Zealand study to evaluate implied health claims using realistic stimulus materials that are relevant to mandatory information on food products and provides valuable insights into how consumers perceive implied health claims.

The qualitative study protocol consisted of a few questions and multiple probing questions to attempt to uncover the reasons behind participants' preferences for natural implied health claims.

The analysis consisted of constant comparison to other interviews and interview questions according to ongoing and iterative research. This allowed the emergent theory to be shaped by the conceptual analysis and provided a rich density of information.

The long follow up time between Phase I and Phase II facilitated a reflexive process of analysis; Phase II allowed the study to focus on particular aspects of implied health claims that emerged as conceptual aspects of product evaluation in Phase I.

5.4.2 Limitations

Although this study does not allow us to generalise the experiences of these ten people the results will be of interest to public health officials because there are lifestyle aspects that help to give insight into food shopping.

The small sample gives an excellent preliminary sample, but since the findings illustrate more diversity than expected further research could recruit a larger sample or a mixed methods study in a convergent design that would give even more insight into this area.

Given that implied health claims is an under researched area, further empirical research could engage with participants as they make their food product choices. Verbal 'protocol analysis' (Higginson et al, 2000a; Higginson et al, 2000b) could be used to capture the real life examples of dichotomous behaviour as consumers respond to implied health claims on food packaging. Researchers might consider using new methods, such as 'walking with' participants (Irving 2007), which are used in anthropology and sociology within a more mobile paradigm of research. Real life recordings of participants' consumer understanding and behaviours would strengthen this study's use of interview methods of data collection.

6. Conclusion

The purpose of this study was to explore individuals' perceptions of natural implied health claims, and the effects of natural implied health claim on food product evaluation and food choice.

The literature review suggests that natural implied claims are widely used by food manufacturers and that individuals have a preference towards natural substances (Rozin *et al* 2004). This study was interested in exploring what makes natural implied claims beneficial to consumers in the context of food product evaluation and food choices. To achieve this aim, the researcher explored participants' beliefs on natural implied claims in the context of their usual shopping practices, and by their evaluation of a mock breakfast cereal with a natural implied health claim. A second phase of qualitative interviews with existing participants explored participants' perceptions and the effects of both implied and explicit health claims on product evaluation and food choice.

Participants are faced with a myriad of food choices daily. These ten participants expressed various strategies to make food purchase decisions manageable; within these strategies were a number of contradictions. They desire healthy foods but their taste preferences more often drive their food choices. They would like to buy organic or natural foods but are limited by their budget. They prefer multiple choices but sometimes find the number of choices overwhelming. They prefer more FoP information but view the information with distrust. They described natural implied health claims to imply a food that contained minimal processing and nil additives but were aware that the claims were displayed on processed food products that were contained ingredients to ensure a long shelf life.

In the present study, several participants' descriptions of natural implied health claims suggested a 'halo effect' as they inferred positive attributes beyond the scope of the claim, knowledge of this misleading claim led participants to view FoP claims with scepticism. Previous researchers have described the difficulty in defining natural implied health claims (US FDA; Williams 2009). Most regulatory agencies have

provided some guidelines on appropriate ingredients in a food that displayed a natural implied health claim.

The decision to permit natural implied health claims to remain as an undefined term adds to the consumers' confusion and scepticism of FoP claims and yet retains an ambiguity that appears to be what this study's participants said they found appealing. This study concludes that natural implied health claims are perceived by these ten consumers as appealing because they imply a healthy choice.

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Appendix I

Information Sheet to participants

**Consumer Perceptions of 'Natural' Health Claims on Breakfast
Cereals and Muesli Bars in New Zealand"**

INFORMATION SHEET FOR
PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

What is the Aim of the Project?

This project is being undertaken as part of the requirements for a Masters in Science. The overall aim of the research is to investigate how the health claim of 'natural' is interpreted by consumers when used in the labeling of muesli based breakfast cereals and muesli bars.

What Type of Participants are being sought?

We are recruiting adult New Zealanders to participate in the study. Individuals will be excluded if they do not regularly consumer muesli cereals or muesli bars/(alternative: Individuals will be excluded if they have not consumed muesli breakfast cereals or muesli bars within the last six months).

What will Participants be asked to Do?

The study consists of two parts: an in-depth questionnaire and online survey.
In depth questionnaire:

Should you agree to take part in this project, you will be asked to attend a one hour session where you will be asked to examine fictitious examples of a muesli breakfast cereal and muesli cereal bar. You will then be asked a series of questions on your

understanding of the natural claim, nutrition information and intent to purchase based on the product information.

Please be aware that you may decide not to take part in the project without any disadvantage to yourself of any kind.

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind.

What Data or Information will be Collected and What Use will be Made of it?

Information will be collected on your perception and use of nutrition information on fictitious muesli breakfast cereals and muesli bars and the information will be recorded.

This project involves an open-questioning technique where the precise nature of the questions which will be asked have not been determined in advance, but will depend on the way in which the interview develops. Consequently, although the University of Otago Human Ethics Committee is aware of the general areas to be explored in the interview, the Committee has not been able to review the precise questions to be used. In the event that the line of questioning does develop in such a way that you feel hesitant or uncomfortable you are reminded of your right to decline to answer any particular question(s) and also that you may withdraw from the project at any stage without any disadvantage to yourself of any kind.

The results of the project may be published and will be available in the University of Otago Library (Dunedin, New Zealand) but every attempt will be made to preserve your anonymity.

You are most welcome to request a copy of the results of the project should you wish.

The use which will be made of the data and who will have access to it including researchers, external funding entities, typists, transcribers, staff making photocopies etc.

The data collected will be securely stored in such a way that only those mentioned below will be able to gain access to it. At the end of the project any personal information will be destroyed immediately except that, as required by the University's research policy, any raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed. Reasonable precautions will be taken to protect and destroy data gathered by email. However, the security of electronically transmitted information cannot be guaranteed. Caution is advised in the electronic transmission of sensitive material.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact either:-

Nadia Vather -MSc student	or	Professor Jim Mann
Department of Human Nutrition		Department of Human Nutrition
University Telephone Number:-		University Telephone Number:-
(03) 479 7940		(03) 479 7719

Or

Professor Janet Hoek
Department of Marketing
University Telephone Number: - (03) 479 769

Appendix II

Interview Protocol: Phase I

Interview Protocol on Breakfast Cereals

To explore:

- Awareness of natural claims on packaged foods
- Prompted perceptions of use of natural claims on breakfast cereals
- Attitudes to the use of natural claims on breakfast cereals
- Perceptions on food imagery associated with natural (pure, wholesome, untreated, unprocessed, raw)

Introduction and Warm up – Brief (5 minutes)

Consent and permission to record

Section 1(5-10 minutes)

General breakfast cereals

- Tell me about a normal trip to the supermarket. When you are buying food, what sorts of things do you look for?
- Imagine that you are buying cereals for your family. What do you look for when buying cereal?

Section 2 (20 minutes)

Next, I would like to get your views on the information presented on packages of breakfast cereals.

Mock up – General Breakfast Cereal

- Here is a brand of cereal, please take a minute to read the package.
- What details do you notice (do not prompt)?

- What benefits, if any, do you think this product might have?
- What makes you associate these benefits with the brand?
- Are there any other comments you would like to make about this cereal package?

Mock up - Natural Breakfast Cereal

- Here is another brand of breakfast cereal. Again, please take a moment to read the package.
- What details do you notice (do not prompt)?
- What benefits, if any, do you think this product might have?
- What makes you associate these benefits with the brand?
- If natural not already mentioned: Had s/he noticed the natural claims on the brand?
- How does this make you think about the cereal?
- Are there any other comments you would like to make about this cereal package?

General Breakfast - Cereal and Natural Breakfast Cereal.

- I'm going to show you both products again.
- If you had to choose between these two products, which would you choose?

- How would you make this decision?
- Which do you think would be the best family cereal? How did you decide?

Section 3 Food Imagery (ten minutes)

- I am going to list a series of words and ask you what thoughts come to mind.
- Natural, Pure, wholesome, unprocessed, raw
- What does the word ____ communicate about the product? What ingredients do you think a product described as _____ would have?
- What benefits do you think _____ may provide?

What kind of evidence do you think manufacturers need before they can describe their product as ____? Have you noticed _____ on labels before today (not necessarily on breakfast cereal)? What sorts of products were these? What did you think about them compared to other products?

Section 4 - Participant Demographics (5 minutes)

- Year born
- Education
- Number of children under 15 living at home
- Ethnicity

Thanks and provide voucher.

Have participant sign for voucher.

Close interview.

Appendix III

Stimulus Materials: Phase I



Mann's Muesli

Berry Muesli

600g net





Mann's Muesli

Berry Muesli

100% Natural

600g net



Mann's Berry Muesli



Ingredients:

Wholegrain Cereals (72%) (Rolled Oats, Red Wheat), Raspberry Flavoured Wheat Flakes (Wholegrain Wheat, Sugar, Barley Malt Extract, Salt, Emulsifier [471], Natural Colour [Carmine], Flavour), Berry Fruits (14%) (Currants, Berry Pieces [Fruit {Apple Paste, Strawberry Puree, Plum Paste, Elderberry Concentrate, Blueberry Puree, Raspberry Juice Concentrate}], Invert Sugar, Sugar, Humectant {Glycerol}, Dextrose, Wheat Fibres, Acidity Regulators {Lactic Acid, Tripotassium Citrate}, Gelling Agent {Pectin}, Flavours, Antioxidant {Ascorbic Acid}], Cranberries), Yoghurt-Compound Raisins (Whey Powder, Yoghurt Powder, Emulsifier [Soya Lecithin]), Sugar.

Produced by:
Mann's Food Ltd
PO Box 81 – 990
Victoria Street, Auckland
1180

Free phone 0800 505 5100
Email muesli@manns.co.nz
www.mannscereals.co.nz


Store in a cool, dry place

Contains oats, wheat, gluten, milk products and soya products and may contain traces of peanuts and other nuts.

Allergens: Wheat Gluten Soy
Dairy Peanuts Nuts

Servings per Pack 12 Serving Size 50.0g	Avg. Qty per Serve	Avg. Qty per 100g
Energy	739kJ	1478kJ
Protein	5g	10g
Fat – Total	2.8g	5.6g
- Saturated	0.7g	1.4g
Carbohydrate - Total	31g	62g
- Sugars	8.7g	17.4g
Fibre	5.2g	10.4g
Sodium	12.0mg	24mg

BEST BEFORE 29 05 2010 8069 MB04




Mann's Muesli

Tropical Muesli

600g net





Mann's Muesli

Tropical Muesli

Full of Natural Goodness

600g net



Mann's Tropical Muesli



Ingredients:

Rollled Oats, Fruit (20%) [Papaya Pieces, Pineapple Pieces, Raisins, Apricot Flakes, Diced Apple, Peach Pieces, Coconut], Brown Sugar, Yoghurt-Compound Raisins (4%) [Whey Powder, Yoghurt Powder, Emulsifier (Soya Lecithin)], Peanuts, Canola Oil, Honey, Flavour, Preservative (220).

Servings per Pack 12 Serving Size 50.0g	Avg. Qty per Serve	Avg. Qty per 100g
Energy	739kJ	1478kJ
Protein	5g	10g
Fat - Total	2.8g	5.6g
- Saturated	0.7g	1.4g
Carbohydrate - Total	31g	62g
- Sugars	8.7g	17.4g
Fibre	5.2g	10.4g
Sodium	12.0mg	24mg

Produced by:

Mann's Food Ltd
PO Box 81 - 990
Victoria Street, Auckland
1180

Free phone 0800 505 5100

Email muesli@manns.co.nz

www.mannscereals.co.nz

Store in a cool, dry place

Contains oats, wheat, gluten, peanuts, milk products, soya products, sulphites and may contain traces of other nuts.

Allergens Wheat Gluten Soy
Dairy Peanuts Nuts Sulphites

BEST BEFORE 29 05 2010 8065 MT05

Appendix IV

Interview protocol: Phase II

Introduction

Thank you for coming back to talk with me. Similar to our previous discussion, I would also like to record this, if you are ok with it? Okay?

Last time I asked you about what you thought about a mock breakfast cereal. I came back to talk about implied health claims, not of particular ones, but what it means to you in general.

To start out I would like to explain what I mean when I talk about health claims. You probably are familiar and have some experience with health claims.

The first group of health claims that I would like to talk to you about are explicit health claims. These include statements that describe a substance in the food or a health benefit. There are several kinds of explicit health claims. The first type describes the presence or absence of a nutrient or substance (e.g. low in fat), and is the most common type of explicit health claim in New Zealand (FSANZ, 2005). The second types of explicit health claims refer to the maintenance of good health or normal body functions (e.g. helps keep you regular as part of a high fibre diet). The last type of explicit health claims refers to performance and wellbeing in relation to food (e.g. 'gives you energy') (FSANZ p293 document, page 127).

The second group of health claims that I would like to talk to you about are implied health claims. Implied claims include pictures, symbols, words or brand names that suggest a health benefit (P293 attachment 4). Some examples include these (provide examples of real products).

Do you have any questions?

Next, I would like you to look at some real food products and I'm going to ask you a few questions on the explicit and implied health claims. As always, I am most interested in your honest opinions Okay? Lets begin.

Explicit and Implied claims –

1. Description and Benefits

Here is product X (Ryvita crackers) and product Y (Vita-weat crackers). I would like to draw your attention to the explicit and implied claims ('High in Fibre' and 'wholegrain goodness') on the front. I want you to examine the front of these products and let me know when you are ready to begin. Okay?

How would you **describe** the explicit claim ('high in fibre') claim? In comparison, how would you describe the implied claim ('wholegrain goodness') claim? Could you explain how you reached that description?

What **benefit** does an explicit claim such as 'high in fibre' express to you? In comparison, what benefit does an implied claim such as 'wholegrain goodness' express to you?

Can you tell me more about why the benefits are the same/different?

(optional) Do you consider the explicit claim and the implied claim y to be marketing or nutrition evidence? (yes/no question)

2. Nutrition Content

Again, I would like you to look at two products (Mother Earth – ‘Baked Fruit Sticks’; Pams – ‘Fruit cereal bars Appleberry’), specifically the explicit and implied claims on the front. When you are ready, please let me know when to start.

- When you read an explicit health claim such as ‘97% fat free’, what thoughts on the nutrition content if any, come to mind about the product?
 - Could you tell me more about this association?
 - Could you explain if this association is helpful? In what way?
 - Can you think of an example when you have done this?

- In comparison, when you read an implied claim such as ‘made with wholesome ingredients’, what thoughts on the nutrition content if any, come to mind about the product?
 - Could you tell me more about this association?
 - Could you explain if this association is helpful? In what way?
 - Can you think of an example when you have done this?

3. Confirmation

Again, I have two products with an explicit (Fantastic seaweed rice crackers – 99% fat free) and implied claim (Arnott's Vita-weat 100% Natural). I want you to look at the claims as a skeptical consumer, and let me know when you are ready to proceed.

- How would you **confirm** an explicit health claim such as 99% fat free ? In comparison, how would you confirm an implied claim such as '100% Natural'?
 - Can you tell me more about the way you confirm the two claims as the same/different?
 - Under what conditions would you trust your initial impressions of an explicit claim or implied claim such as these, and not check this further (if described above)?
 - Can you recall a situation that you have done this? Can you describe this in more detail?
 - Would time effect whether or not you inspected the explicit or implied claim further? Why is that? Would this be true for both claims?
 - Would the trustworthiness of the claim, effect whether or not you inspected the explicit or implied claim further? Can you explain why?
 - Are there any other factors that may effect if you inspected the claim further?

Thanks and provide Voucher for participation.

End of Interview

Appendix V

Stimulus Materials: Phase II







INGREDIENTS

Cereals (34%) (Wheat Flour, Wheat Bran, Wheat Fibre), Fruit (25%) (Sultanas, Dried Apple (8%) (Preservative (221)), Boysenberries (2%), Strawberries (2%), Blackcurrant Juice Concentrate (0.5%)), Sugar, Margarine (Vegetable Oils, Water, Salt, Emulsifiers (471, Soy Lecithin), Antioxidants (307, 385), Flavour, Colour (160a)), Maltodextrin, Modified Starch (1401, 1442), Humectant (Sorbitol), Invert Sugar, Milk Solids, Emulsifier (Soy Lecithin), Salt, Flavour, Raising Agents (500, 341), Acid (Citric), Colour (Grapeskin Extract), Flavour Enhancer (636).

Contains: Wheat, Milk Solids, Soy and Sulphites.

Manufactured in a facility which also processes: Oats, Barley, Egg, Peanuts, Sesame Seeds and Other Nuts.

NUTRITION INFORMATION

Servings per package: 6

Serving size: 1 bar

Average Quantity	Per Serve	Per 100g
Energy	750kJ	1500kJ
Protein	2.2g	4.4g
Fat, total	4.2g	8.4g
- saturated	1.9g	3.9g
Carbohydrate	32.3g	64.7g
- sugars	15.2g	30.4g
Dietary Fibre	2.0g	3.9g
Sodium	167mg	335mg

pams[®]

FRUIT cereal bars

made with
wholesome
ingredients



APPLE BERRY

a delicious apple and berry filling wrapped
in a soft baked crust of wholesome cereals

6
BARS
300g NET





Baked Fruit STICKS BLUEBERRY

INGREDIENTS: WHEAT FLOUR, BLUEBERRY FILLING (33%) (BLUEBERRY PUREE (27%), CONCENTRATED APPLE PUREE, CONCENTRATED PLUM PUREE, CONCENTRATED PEAR PUREE, SUGAR, GLUCOSE SYRUP, HUMECTANT (GLYCEROL), WHEAT FIBRE, ACIDITY REGULATORS (MALIC ACID, TRIPOTASSIUM CITRATE), GELLING AGENT (PECTIN), FIRMING AGENT (327), FLAVOUR), SUGAR, GOLDEN SYRUP, MALTODEXTRIN, BROWN SUGAR, MARGARINE (VEGETABLE OIL, WATER, SALT, EMULSIFIERS (471, SOYBEAN LECITHIN), ANTIOXIDANT (320)), DESICCATED COCONUT (COCONUT, PRESERVATIVE (SULPHUR DIOXIDE)), RAISING AGENTS (450, 500), EMULSIFIER (471), WHEAT BRAN, WHEATGERM, FLAVOUR, SALT, NATURAL COLOUR (ANNATTO).

MAY CONTAIN TRACES OF PEANUTS, TREE NUTS, MILK PRODUCTS, EGG AND SESAME SEEDS.

AVERAGE NUTRITION INFORMATION

Servings Per Package: 8

Serving Size: 19g (1 bar)

	Per Serving (1 bar)	Per 100g
ENERGY	257kJ	1350kJ
PROTEIN	0.7g	3.9g
FAT-TOTAL	0.5g	2.6g
-Saturated	0.2g	1.1g
CARBOHYDRATES	12.5g	65.9g
-Sugars	6.7g	35.3g
SODIUM	43mg	226mg